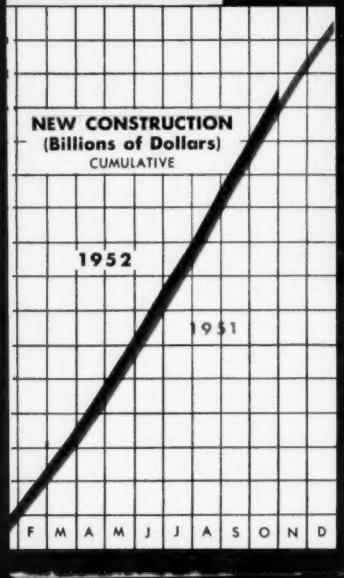
The CONSTRUCTOR

OFFICIAL PUBLICATION OF THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA

Volume XXXIV **NOVEMBER 1952** Number 11

- BUILDINGS
- HIGHWAYS
- AIRPORTS
- RAILROADS
- PUBLIC WORKS



Government, Industry Disagree on Controls—21

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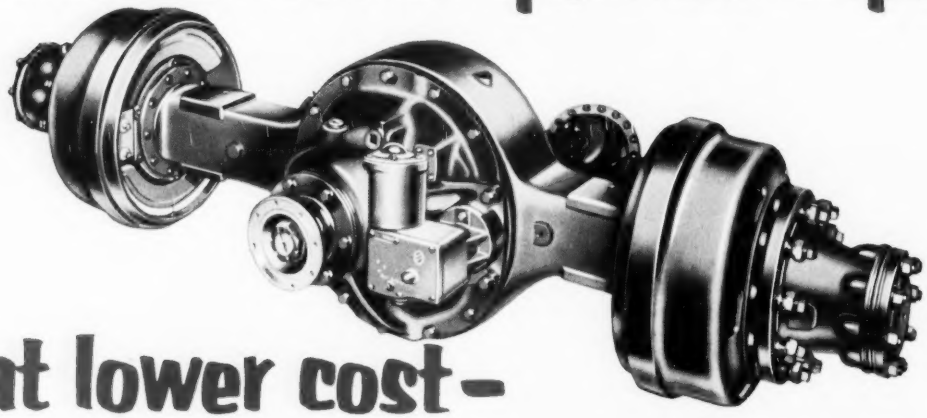
A.G.C. Wins National Safety Council Award—75

EATON 2-Speed equipped Trucks make quicker trips



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'INCOR' SPEEDS COLD-WEATHER CONCRETING

of Hudson River Pier Extension

'Incor' Concrete Placed One Day, was in Use the Next

● To speed ship turn-around, widening and lengthening of Belgian Line's Pier 14, on New York City's North River, had to be pushed straight through last Winter. J. RICH STEERS, INC., Contractor, took frosty winds and icy spray in stride, by relying on the dependable high early strength of 'INCOR' AIR-ENTRAINING* 24-HOUR CEMENT. Extra workability speeded placing . . . with minimum heat protection, 'Incor' gained service strength, was safe from freezing, days sooner than ordinary concrete would have been . . . incoming freight was unloaded on 'Incor' concrete 24 to 48 hours after placing.

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CITY OF NEW YORK

Lessee:
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Contracting Engineer:
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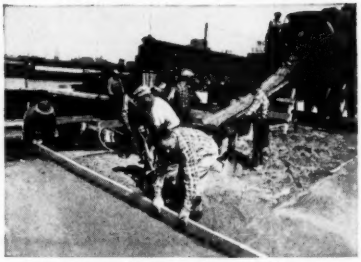
Performance like this explains why so many leading contractors rely on America's FIRST high-early-strength portland cement where the going is tough—and wherever maximum speed means minimum cost, as it almost always does.



'INCOR' AIR-ENTRAINING 24-HOUR CEMENT was used for 11' concrete apron, extending 500' on south side of Pier 14, North River, and for 177' pier extension. In mid-Winter, with minimum heat protection, freight was unloaded on 'Incor' concrete 24 to 48 hours after placing.

* For useful information about Air-entrained Concrete, write for 36-page illustrated booklet, "Lone Star Air-Entraining Cements." Address Lone Star Cement Corporation, 100 Park Ave., New York 17, or nearest Lone Star office, listed below.

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The CONSTRUCTOR

BUILDINGS • HIGHWAYS • AIRPORTS • RAILROADS • PUBLIC WORKS

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COVER

Concrete placing operations were continued 24 hours a day, seven days a week as crews rushed work to completion on Hungry Horse Dam. This picture of the big project was taken in June. The last concrete was poured last month on the 564-ft.-high structure, which cost the Bureau of Reclamation $102 million. (See story on page 43.)

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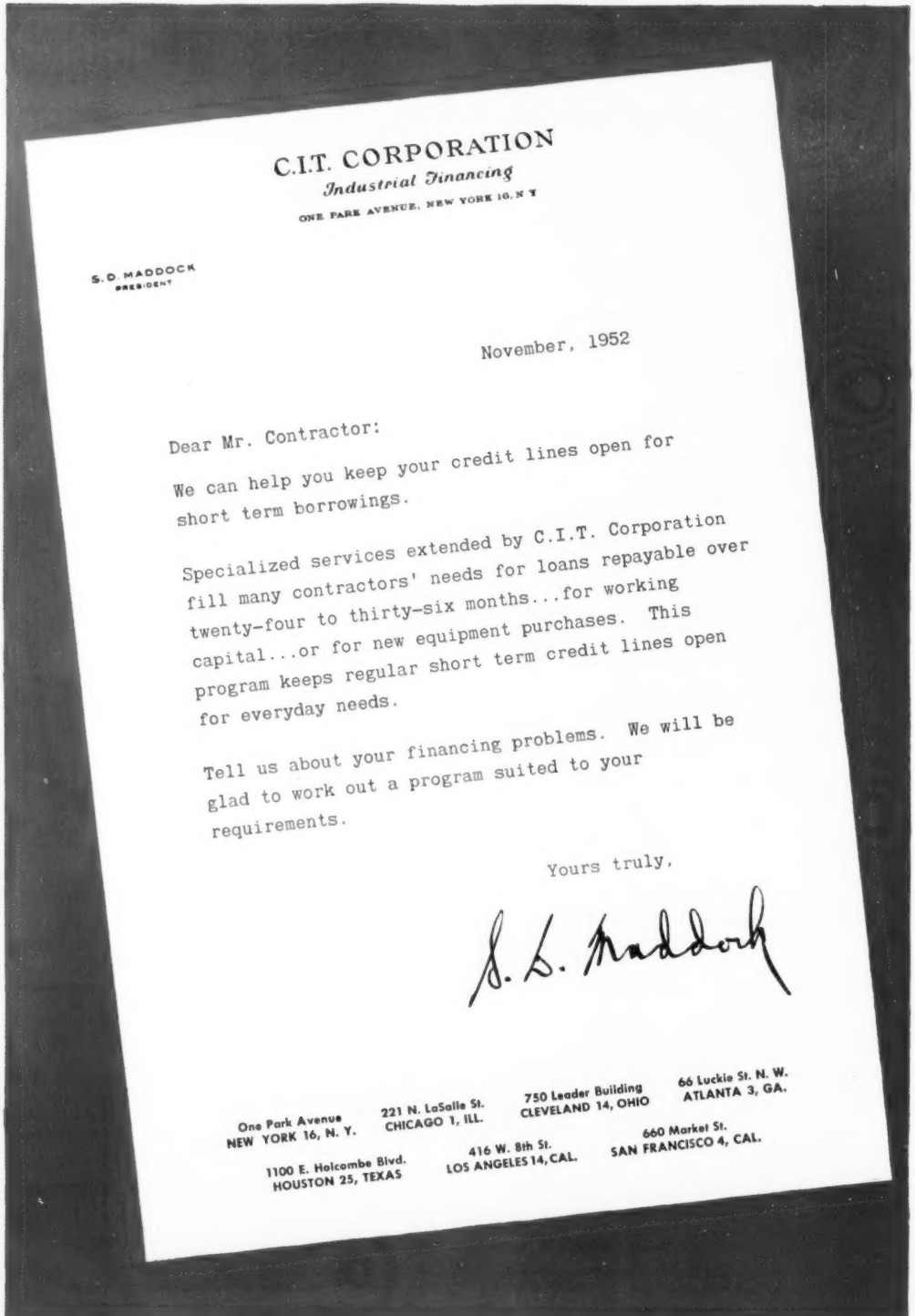

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We can help you keep your credit lines open for short term borrowings.

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Government and industry disagreed last month on the time when federal controls over construction should be relaxed or terminated. National Production Authority recently increased the amounts of controlled materials which may be self-certified for most types of construction next May 1. Members of the agency's Construction Industry Advisory Committee on Oct. 29 recommended that these relaxations should be immediate or not later than Jan. 1. They further recommended that, if the controls were not relaxed now, NPA should continue to approve applications for projects and issue tickets for steel to be delivered in future quarters. (Stories, Page 21)

Structural steel allotments for the first quarter of 1953, which generally permit continuation of all construction already started but only a limited number of new starts, were announced last month by Defense Production Administration. Only new starts permitted in industrial expansion, commercial and municipal construction, except small projects for which materials may be self-certified, must be directly essential to national defense, DPA added. (Page 22)

National joint committee to further more harmonious relations in the construction industry between general contractors and electrical contractors has been established by The Associated General Contractors of America and the National Electrical Contractors Association. The action was authorized at the Mid-Year Board Meeting of the A.G.C., and President Arthur S. Horner's invitation in September to N.E.C.A. to form the committee was accepted last month by N.E.C.A. President Don B. Clayton, Sr., following approval of such action by the electrical association's Board of Governors. (Page 61)

American Public Works Association and The Associated General Contractors of America have appointed a joint committee to study matters of mutual interest in municipal construction, a step recommended at the Mid-Year Board Meeting of the A.G.C. The committee is expected to consider matters submitted to it by municipal and general contractors, public works officials and others. The invitation to set up the group was extended by A.G.C. President Arthur S. Horner and accepted by Allan H. Rogers, president of A.P.W.A. (Page 61)

House Appropriations Subcommittee on Military Public Works reported the results of 18 months of study and hearings on the entire military construction program in continental United States Oct. 20. Report conceded that some improvements had been made by the individual services but called for more economy, claiming that reforms initiated by that group already have led to a savings of at least $72 million. Excessive use of negotiated contracts was charged. (Page 25)

Air Force construction program underwent two changes last month designed to secure maximum economy in its installations program and to speed construction of its bases in France. For economy, a committee of civilian and military members was appointed to review the Air Force construction program and make recommendations to Air Secretary Finletter "aimed at securing maximum economy in the expenditure of construction funds and more efficient building of air base facilities." In the second case, a $4 million contract was awarded to a group of three construction contractors to expedite and supervise construction of bases in France. (Page 26)

Frank R. Creedon, new director of installations for the Defense Department and former assistant administrator of the National Production Authority, has been made directly responsible to the Secretary of Defense and given appropriate authority to prescribe, implement and supervise execution of policies governing all military construction. (Page 26)

Construction materials are plentiful and controls are no longer needed, A.G.C. members in Western and Southwestern states reported to President Arthur S. Horner and Managing Director H. E. Foreman, who visited chapters in that area the latter part of September and October. (Page 80)

National Safety Council award for "exceptional service to safety" was presented to the A.G.C. at the Council's 40th National Safety Congress and Exposition in Chicago Oct. 22. The new award, to be issued annually, gives recognition to trade associations for the general excellence of their safety programs and for their contribution to the reduction of occupational injuries in their industries. (Page 75)

H. B. Alexander, chairman of the A.G.C. Accident Prevention Committee, was elected general chairman of the Construction Section of the National Safety Council during the recent Safety Congress in Chicago last month. (Page 78)

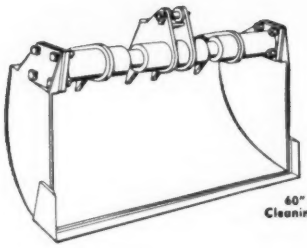
Safety in construction was discussed for three days last month at the National Safety Council's 40th Congress in Chicago last month. Prime consideration was given to the question of how to voluntarily develop more effective measures on construction jobs rather than be faced with the likelihood of federal and state legislation which would bring further hampering restrictions to the industry. (Page 77)

Highway construction program of the nation is being delayed by such major factors as the lack of enough engineers to plan and supervise work, inadequate financing and slow steel deliveries, the joint cooperative committee of the American Association of State Highway Officials and the A.G.C. concluded last month. (Page 48)

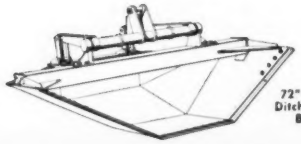
Needed airport construction got a boost last month from Secretary of Commerce Charles Sawyer when he asked the Civil Aeronautics Administration to review its federal-aid airport program as a basis for requesting more funds from Congress for such construction. (Page 48)

Hungry Horse Dam, completed last month, climaxed four years of high-speed construction activity when the last bucket of concrete was dumped into the 564-ft.-high structure. The $102-million Montana project required about 3.1 million cu. yds. of concrete for its completion and, during construction, the contractors set several placement records, Bureau of Reclamation reports. (Page 43)

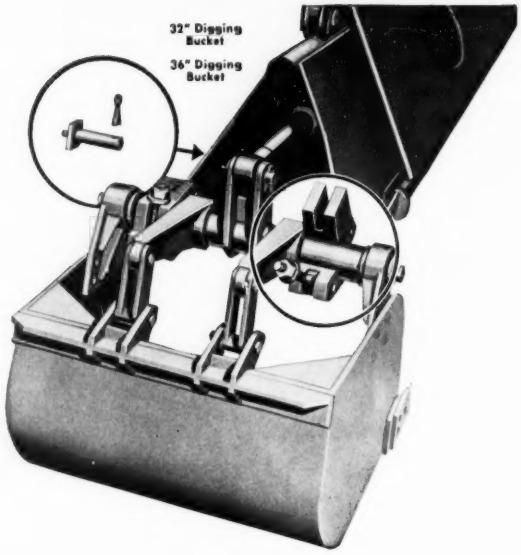
Concrete specifications on Army Corps of Engineer projects are being reviewed by the Corps and The Associated General Contractors of America. The Office of Chief of Engineers, which is revising its documents, "Guide Specifications for Concrete" and "Standard Practice for Concrete," submitted them to an A.G.C.-Corps of Engineers Specifications task unit for review. (Page 29)



60" Ditch Cleaning Bucket



72" Formed Ditch Digging Bucket



32" Digging Bucket

36" Digging Bucket

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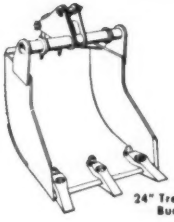
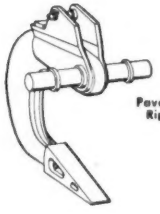
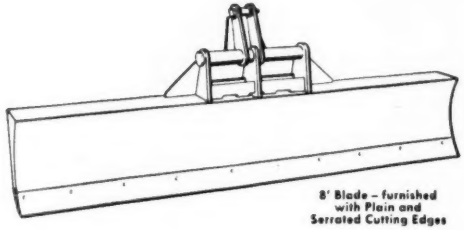


24" Trenching Bucket

15" Self-cleaning Bucket for Wall Footings



Pavement Ripper



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A Series of Graphs Outlining the Construction Trend

Compiled by The Associated General Contractors of America

TREND OF CONSTRUCTION COSTS

The average of construction costs in the principal construction centers of the United States for October stands at Index Number 397, according to the A.G.C. Index. The cost figure for October 1951 was 379. The 1913 average equals 100.

WAGE AND MATERIAL PRICE TRENDS

The average of wages in the principal construction centers of the United States stands at 554 for October. One year ago the average stood at 509. The average prices paid by contractors for basic construction materials for October stand at Index Number 293. The average a year ago stood at 293. The 1913 average, again, equals 100.

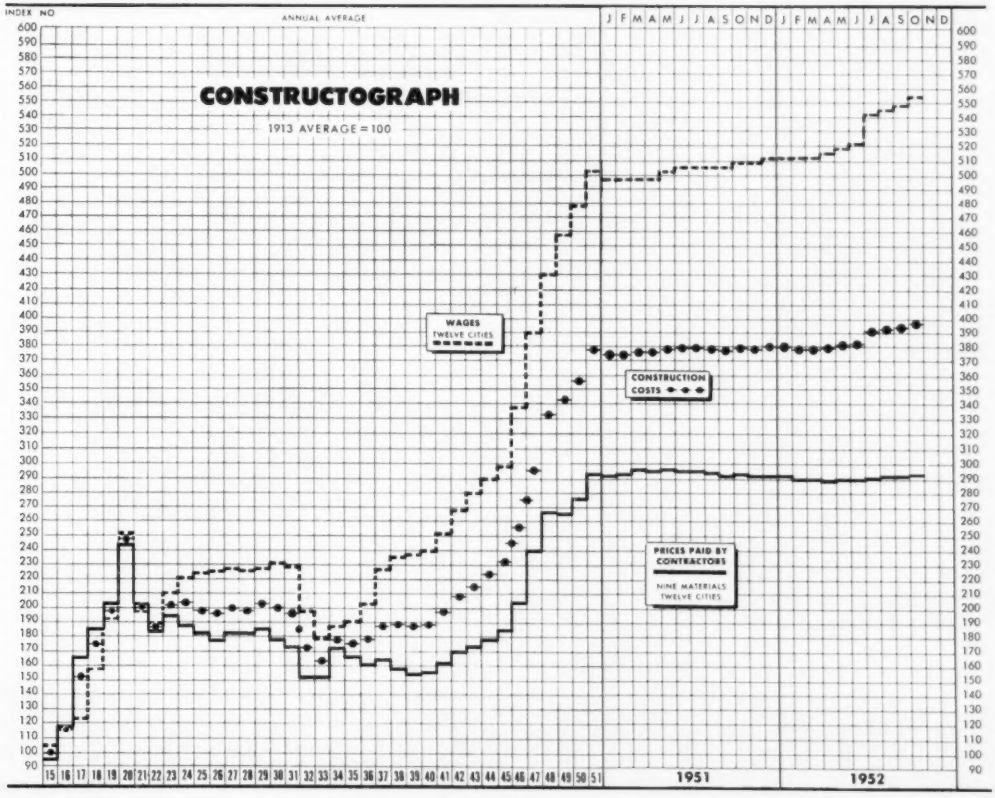
CONTRACT AWARDS IN 37 STATES

The volume of contracts awarded during September (Index Number 393, based on 1936-1938) is an increase of 116 points from August and an increase of 175 points from September 1951. (F. W. Dodge Corp.)

REVENUE FREIGHT LOADINGS

Revenue freight loaded during the first 42 weeks of 1952 totaled 30,550,225 cars. For the same period in 1951, loadings amounted to 32,957,787 cars. This represents a decrease of 7.3%.

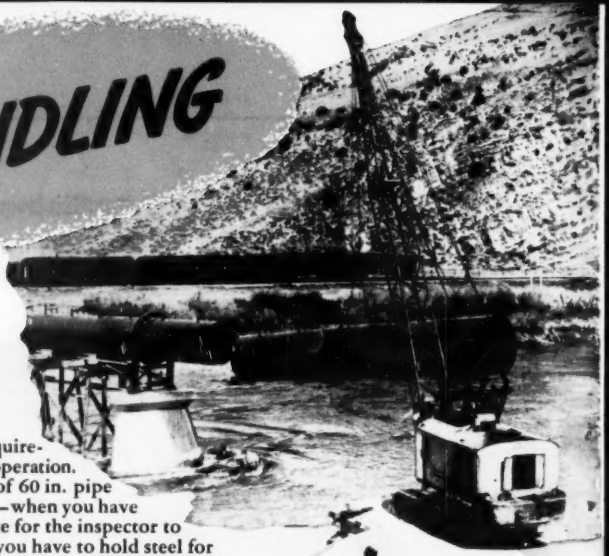
● Wage, Material Price and Construction Cost Trends



where

SMOOTH HANDLING

is a requirement!



IT is when smooth handling is a requirement that you find out about crane operation. When you have to balance 50 ft. of 60 in. pipe and shove it into the next section—when you have to lower a cage down a pier face for the inspector to look the concrete over—when you have to hold steel for welding or riveting, set stone or balance a concrete bucket six stories up and hit the elephant trunk, that is when you appreciate the value of smoothness of operation.

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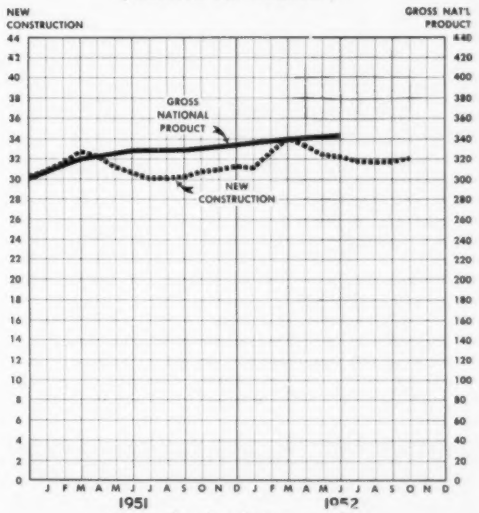
● TOTAL Construction compared with Gross National Product

(BILLIONS OF DOLLARS)

DATA SUPPLIED BY DEPT. OF COMMERCE

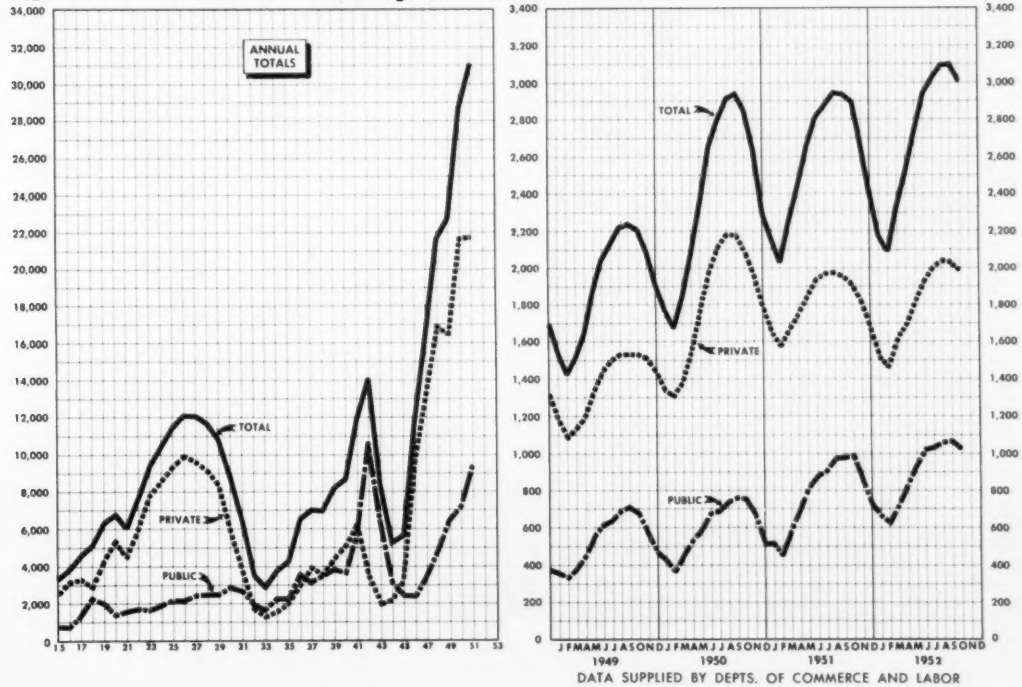
● NEW Construction compared with Gross National Product*

(BILLIONS OF DOLLARS)



* Seasonally adjusted at an annual rate

● New Construction Activity (MILLIONS OF DOLLARS)



DATA SUPPLIED BY DEPTS. OF COMMERCE AND LABOR

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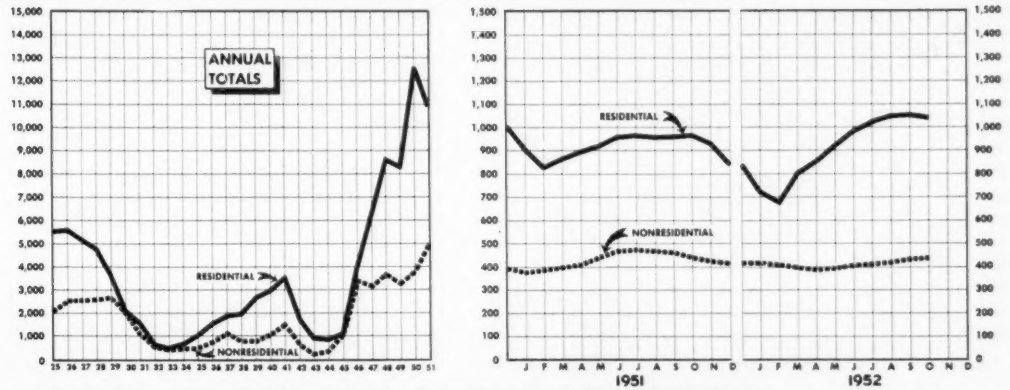
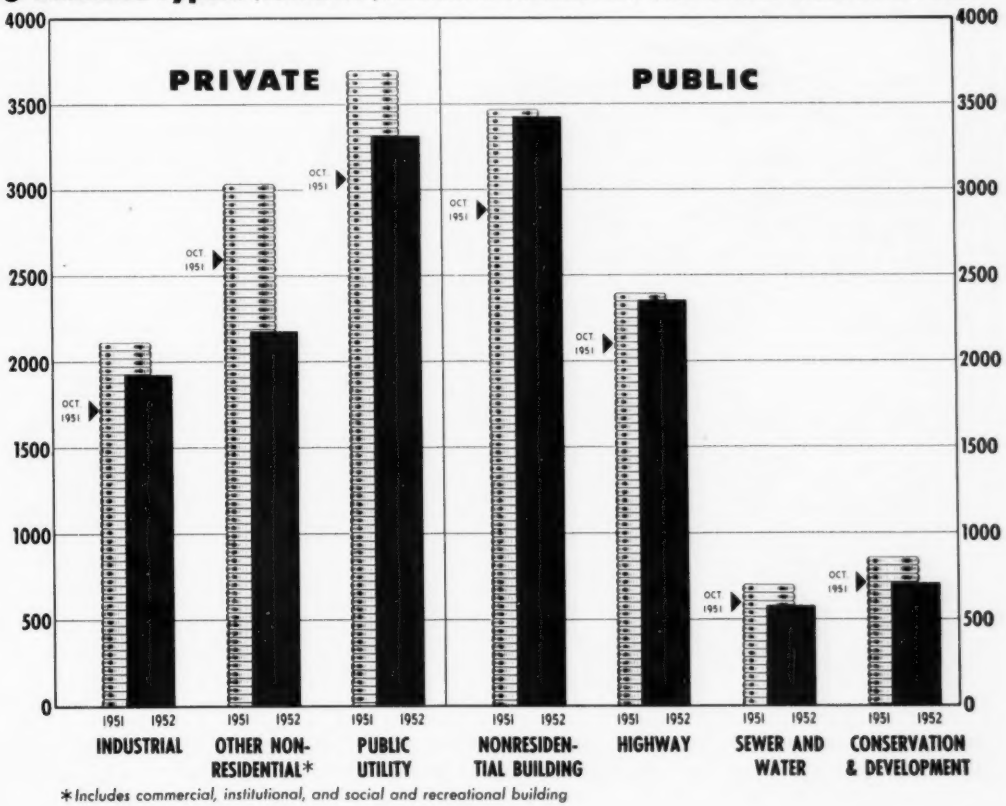
NEW CONSTRUCTION ACTIVITY

● Private Residential and Nonresidential Building * (MILLIONS OF DOLLARS)

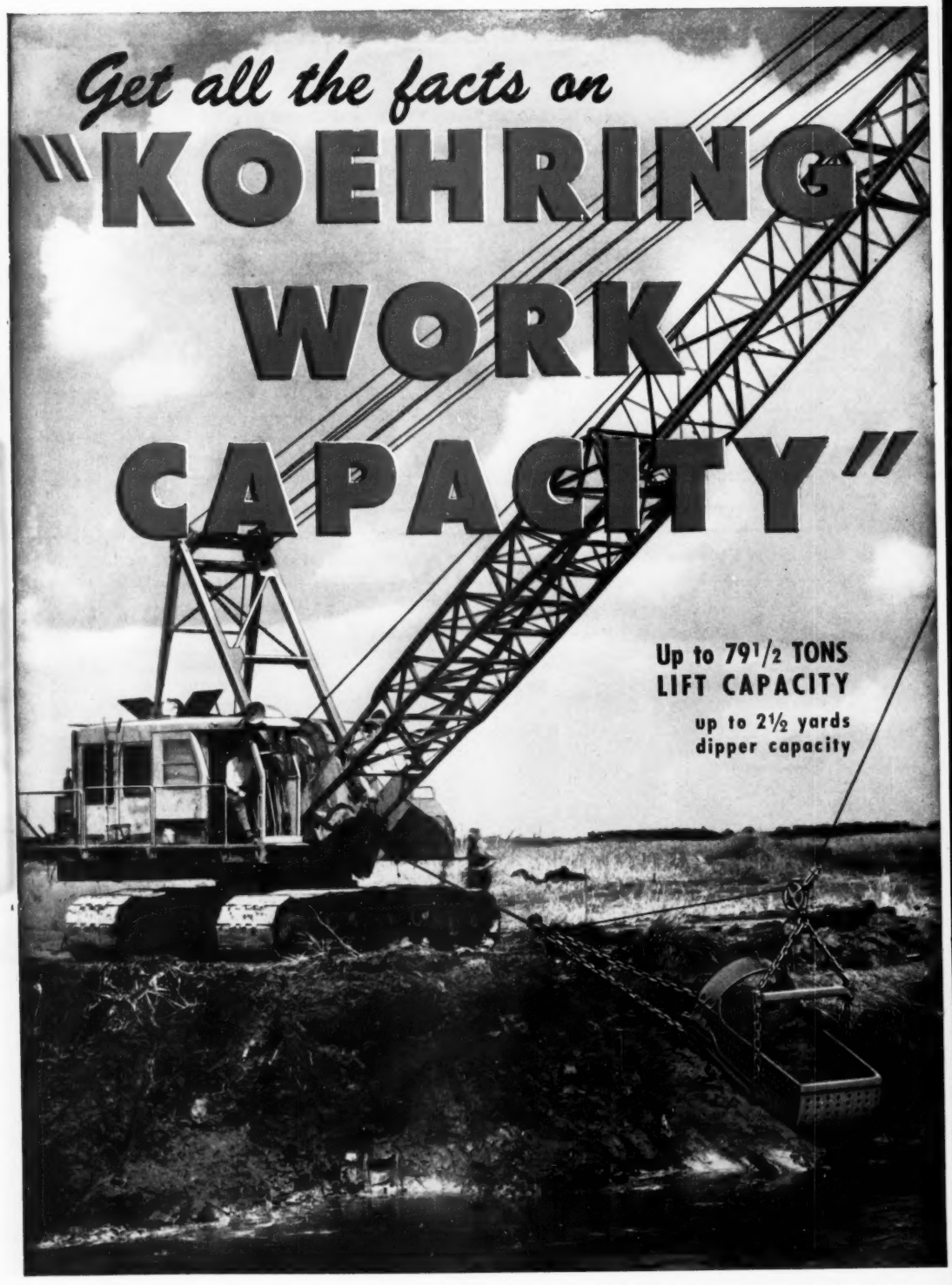


* Residential excludes farm; Nonresidential includes industrial, commercial, institutional, and social and recreational building, but excludes public utility building.

● Selected Types: (CUMULATIVE, MILLIONS OF DOLLARS) 1951, 1952 VOLUME THROUGH OCTOBER



*Includes commercial, institutional, and social and recreational building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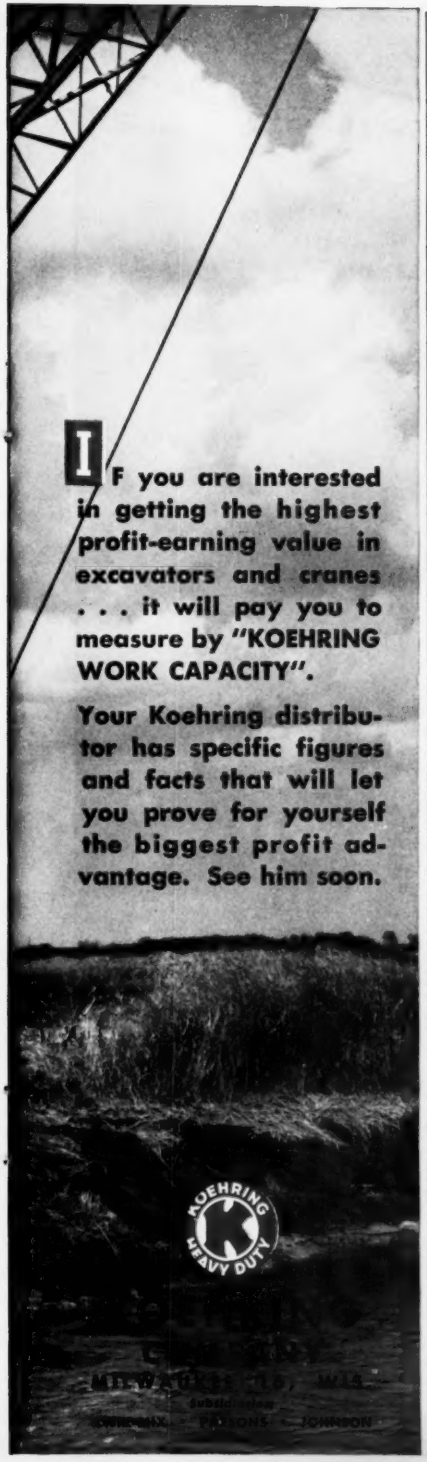

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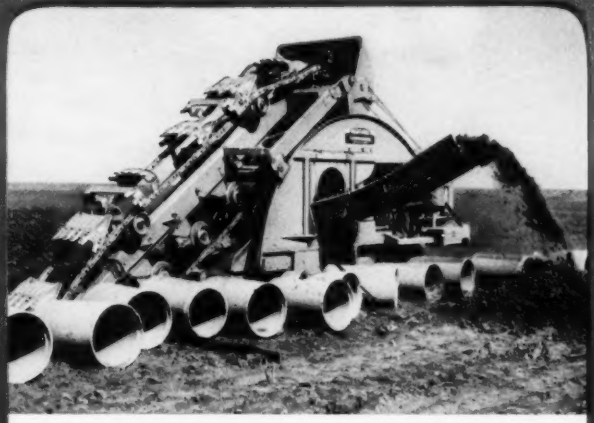

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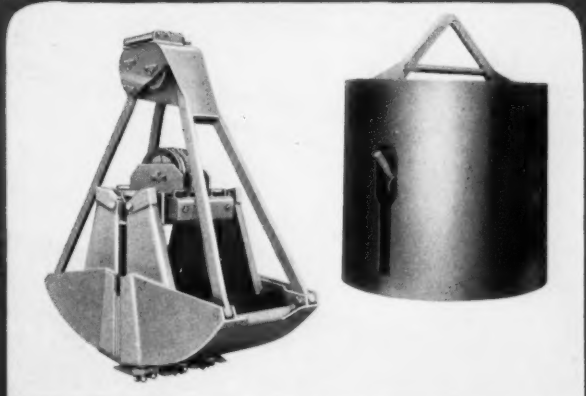

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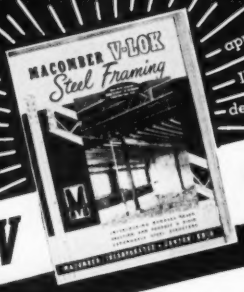

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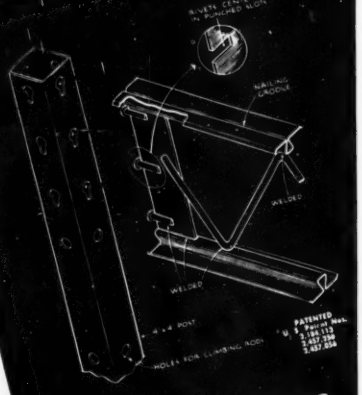

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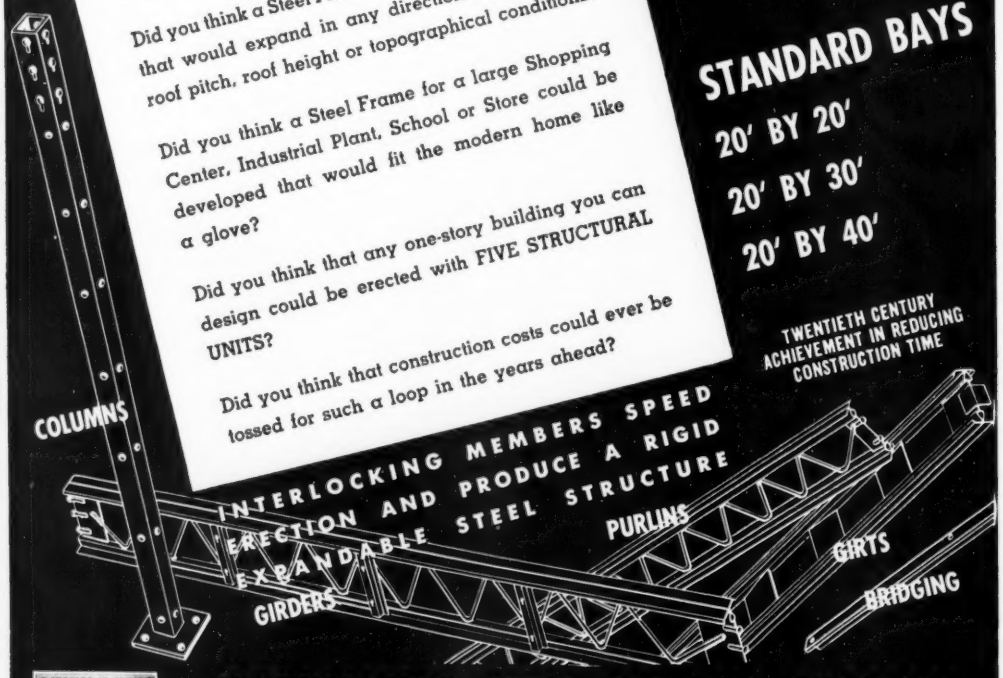

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For Moderate Income Families in Large Cities

(Formerly referred to as the "Cost of Living Index," compiled by the Bureau of Labor Statistics)

This table indicates the average changes in retail prices of selected goods, rents and services bought by the average family of moderate income from July 15, 1950 to September 15, 1952.

They are presented here for use by employers who may wish to take these cost of living data into consideration when contemplating adjustments of wages based on increased living costs.

The Bureau of Labor Statistics surveys 10 key cities every month and 24 other large cities quarterly. Prices are obtained on food, fuel, apparel, house furnishings and miscellaneous goods and services. Rental information is obtained quarterly only for all cities. The computations are based on the indexes for the years 1935-39, which are taken as the average of 100 points.

	1950			1951			1952		
	JULY 15	AUG. 15	SEPT. 15	JULY 15	AUG. 15	SEPT. 15	JULY 15	AUG. 15	SEPT. 15
Average	172.5	173.0	173.8	185.5	185.5	186.6	190.8	191.1	190.8
Birmingham, Ala.	175.7	177.7	179.7	189.2	190.5	191.4	196.7	198.5	196.6
Mobile, Ala.	.....	.....	172.9	.....	.....	185.6	.....	.....	189.4
Los Angeles, Calif.	168.2	169.1	169.5	186.7	186.6	187.2	192.1	192.0	192.2
San Francisco, Calif.	.....	.....	176.0	.....	.....	188.4	.....	.....	195.6
Denver, Colo.	169.5	.....	.....	187.6	.....	.....	192.8	.....	.....
Washington, D. C.	.....	168.9	.....	.....	180.8	.....	.....	187.4	.....
Jacksonville, Fla.	.....	.....	182.4	.....	.....	192.0	.....	.....	199.5
Atlanta, Ga.	.....	176.6	.....	.....	193.1	.....	.....	198.4	.....
Savannah, Ga.	177.2	.....	.....	196.5	.....	.....	202.0	.....	.....
Chicago, Ill.	179.2	180.2	179.8	190.9	190.9	191.8	195.9	196.7	195.9
Indianapolis, Ind.	175.1	.....	.....	186.8	.....	.....	192.1	.....	.....
New Orleans, La.	.....	178.7	.....	.....	188.9	.....	.....	192.7	.....
Portland, Me.	.....	.....	167.9	.....	.....	178.6	.....	.....	182.8
Baltimore, Md.	.....	.....	178.1	.....	.....	190.5	.....	.....	197.6
Boston, Mass.	168.4	168.4	168.2	176.9	177.2	177.8	183.1	183.0	182.2
Detroit, Mich.	176.2	175.1	175.4	188.6	188.5	189.0	193.5	194.2	193.6
Minneapolis, Minn.	.....	.....	173.2	.....	.....	183.1	.....	.....	190.1
Kansas City, Mo.	166.1	.....	.....	179.7	.....	.....	185.6	.....	.....
St. Louis, Mo.	.....	.....	175.0	.....	.....	186.2	.....	.....	192.7
Manchester, N. H.	173.1	.....	.....	184.4	.....	.....	190.2	.....	.....
Buffalo, N. Y.	172.0	.....	.....	185.5	.....	.....	189.9	.....	.....
New York, N. Y.	170.0	168.0	170.3	181.2	180.9	182.5	185.9	185.7	186.0
Cincinnati, Ohio	173.4	174.4	175.5	185.6	185.3	186.8	190.9	190.9	190.7
Cleveland, Ohio	.....	176.0	.....	.....	189.1	.....	.....	194.2	.....
Portland, Ore.	179.2	.....	.....	195.7	.....	.....	198.6	.....	.....
Philadelphia, Pa.	171.5	172.3	173.6	185.4	185.4	186.1	191.1	191.2	190.8
Pittsburgh, Pa.	174.9	176.4	177.7	189.3	188.8	190.0	192.1	192.9	192.4
Scranton, Pa.	.....	171.8	.....	.....	182.5	.....	.....	189.4	.....
Memphis, Tenn.	.....	.....	177.2	.....	.....	189.9	.....	.....	192.9
Houston, Tex.	175.1	177.9	179.8	192.6	193.0	194.1	195.1	196.0	195.6
Norfolk, Va.	.....	177.2	.....	.....	188.6	.....	.....	195.7	.....
Richmond, Va.	168.1	.....	.....	181.3	.....	.....	185.8	.....	.....
Seattle, Wash.	.....	175.2	.....	.....	190.9	.....	.....	195.9	.....
Milwaukee, Wis.	.....	175.7	.....	.....	192.3	.....	.....	199.2	.....

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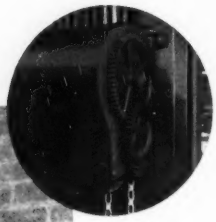
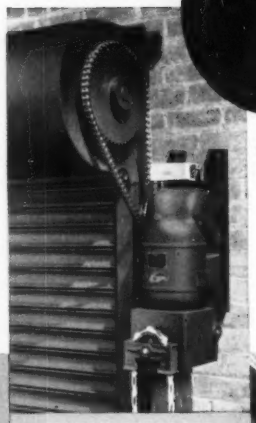


MAHON CHAIN-GEAR OPERATOR



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Sidelights for Contractors

By John C. Hayes, *Counsel*

Taxes

Accelerated Depreciation.—A Court of Appeals has held that evidence of increased hours of work and use of equipment does not warrant a taxpayer, who normally employs the straight line method of computing depreciation, in taking abnormal or accelerated depreciation unless there is a showing that the useful life of the depreciable equipment was in fact materially shortened thereby.

Basis for Depreciation.—Where a taxpayer and the Commissioner of Internal Revenue, after extensive and deliberate negotiations, entered into consent decrees in the Tax Court fixing the 1913 valuation of property for depreciation purposes for the taxable years 1933 and 1938, a Court of Appeals ruled that the commissioner could not later reopen the same question of fact for the taxable years 1943-1945. "Once a party has fought out a matter in litigation with the other party, he cannot later renew that duel."

Holding Period. — In determining whether a newly constructed apartment building was held by its owner for more than six months, the Tax Court decided that his date of acquisition was the date the building was completed, rather than the earlier date upon which the building contract was executed. Since the building had not been completed for more than six months, gain on its sale could not be reported as capital gain under section 117(j) of the code.

Collection of Notes.—As a general rule, a gain by a taxpayer from the sale or exchange of a mortgage, discount, or other claim is taxable as a capital gain, while a gain from the collection of such a claim constitutes ordinary income. Where a stockholder received such claims on the non-taxable dissolution of a corporation, a Court of Appeals held that his gain on the subsequent collection of the claims was taxable as ordinary income.

Excess Profits Tax.—The Tax Court has interpreted narrowly code section 122 (d) (6) for the deduction of excess profits taxes in computing net operating loss carry-backs and carry-overs. While such section permits the deduction of taxes "paid or accrued" within the taxable year, the court held that this places each taxpayer upon his own method of accounting and that an accrual-basis taxpayer must take such a deduction in the year it accrues rather than in a later year of payment.

Transportation Tax.—The Commissioner of Internal Revenue has proposed regulations concerning the non-applicability of the tax on transportation of property to material excavated in the course of construction work. These regulations provide, in part:

> "To come within the exemption it is necessary that two conditions be met, namely, (1) that the property be earth, rock, or other material excavated within the boundaries of, and in the course of, a construction project, and (2) that the transportation of the excavated material be within the boundaries of the construction project or to a place adjacent thereto.
>
> "In determining the boundaries of a construction project, consideration will be given to the type of construction operation which is involved and the area which is required to perform and carry out the necessary work. For example, in the case of a road-building operation, the boundaries of the project would embrace the area covered by the length and width of the roadway, plus any adjoining right-of-way. In the case of the construction of an airport, the boundaries would include the outermost limits of the airport."

Public Contracts

Bid Bonds.—The government may accept a bid, the Court of Claims ruled, notwithstanding that the bid was submitted without a bid bond, contrary to the requirement stated in the invitation to bid. The court felt that the government should be able to waive the bid bond requirement, since it was intended for the government's benefit, and to accept the bidder's offer to substitute performance and payment bonds.

Subsurface Conditions. — Where an excavation contractor was misled to his detriment by relying on boring-data supplied to bidders by the government, the Court of Claims held that the representations as to the results of the core-borings were a warranty for the benefit of bidders. The contractor was entitled to recover damages sustained by him as a result of misrepresentations in the data so furnished.

Finality Clause.—The Court of Claims has refused to invoke the so-called Wunderlich rule, which accords finality to a ruling by the head of a department in the absence of fraud, where there was a real question as to the timeliness of the contractor's appeal to the Secretary of the Navy but where the latter had failed to make a determination. The court noted that the administrative finality rule applies to decisions by a department head rather than to those by a contracting officer.

Renegotiation.—A bulletin has been issued by the Renegotiation Board on the subject of losses and small profits realized by contractors in performing non-renegotiable contracts. In general, it is stated that the consideration to be given under the risk factor to losses or small profits in performing simultaneous non-renegotiable business of a contractor depends upon the similarity of such business to the contractor's renegotiable business and its connection with such business.

Fair Labor Standards Act.—A District Court ruled that employees of a construction contractor engaged in erecting a flood control levee on the Mississippi River were not engaged in interstate commerce or in the production of goods for commerce within the intent of the Fair Labor Standards Act. The court pointed out that the levee was being built principally to prevent the flooding of adjacent land used for agricultural and other purposes and that it had only a remote influence on the river's navigation channel.

Architect Arthur E. Tennyson says:

"We wanted

strength

lightweight

rigidity

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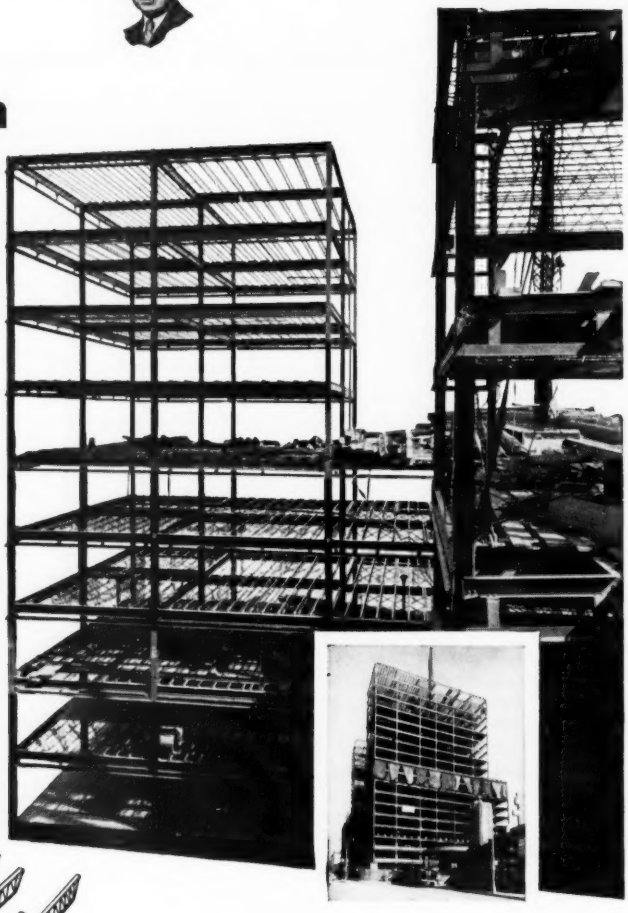

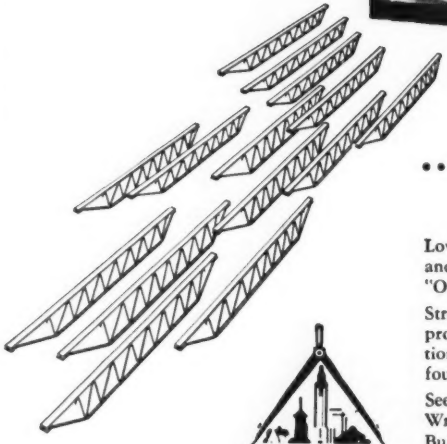

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Military Construction Planning

THE DIFFICULTIES encountered by the military departments in planning and accomplishing efficiently and economically their big construction programs under the "half war" conditions that have prevailed during the past two years were pointed out recently in the report of the Subcommittee on Military Public Works of the House Appropriations Committee. (Page 25)

To see how effectively the rush appropriations for construction required by the Korean outbreak were being used, this committee conducted a study of military public works built in the continental United States during the 14-month period between the start of the fighting in Korea and August 31, 1951.

"Possibly the most important factors which interfered with economy of construction during this period," the committee noted, "were the always costly elements of speed and emergency plus the inadequacy of existing operational and construction plans to handle the peculiar needs of the Korean crisis."

The committee pointed out that military construction planning had been geared to handle two conditions—one, the regular establishments under peacetime conditions when there is adequate planning and construction time, when the same general rules as govern commercial construction are followed, and the other, war involving total mobilization of manpower and industry, and the crash construction of temporary type buildings under expedited contract forms.

The Korean crisis requirements, it was pointed out, fit neither slot. Total mobilization did not occur, but an immediate increase in standing forces was made, assuming a somewhat permanent character under the Communist threat. Speedy construction for military purposes was required, but it was to be of a relatively permanent type. And yet, the services were ordered to observe "austere" standards.

Also, decisions of the services on types and sites of projects were complicated by rapidly changing requirements. This was particularly true of the Air Force, when revolutionary changes in technology and strategy were taking place in aeronautics, affecting, for instance, the kind of fuel tanks when a new type fuel was developed, or different types or lengths of runways for newer aircraft, at times changed even when already under construction.

The committee sent its staff to a number of projects for field study, in addition to conducting hearings. It was not satisfied with what it termed "excessive use" of the negotiated and cost-plus-a-fixed-fee type contracts for new construction, especially when plans and specifications had already been completed.

However, while praising the merits of the competitively-bid, lump-sum contract, the committee did conclude that other types have a place in such a vast and varied construction program, and that they could become indispensable in a time when great speed is necessary at any cost. It also reported, on the basis of comparing a great number of rehabilitation projects, that a "properly controlled" cost-plus contract "lends itself naturally to this type work."

The committee seems to have approached its task in a temperate and constructive manner. While listing a number of areas in which it recommended further improvement for economy, it credited the services with making some advances themselves. While charging waste and errors in judgment in some cases, it recognized the tremendous task and unusual complications faced by the services.

"The purpose of this report," the committee noted, "is to set forth the general principles of more economical military construction, to show what was actually accomplished by this type of study, and to suggest to the services and to the Congress steps which the committee believes will prove helpful in military public works problems facing the country in the future."

A Good Beginning

THE ASSOCIATED General Contractors of America was one of six associations which received a new National Safety Council award "for exceptional service to safety" at the 40th National Safety Congress and Exposition in Chicago last month. (Page 73)

The members of the association, the chapters and branches, the Accident Prevention Committee, and all of those responsible for the association's receiving this recognition can be justly proud of this achievement.

This, however, is the mark of a good beginning rather than the accomplishment of a goal. A few statistics will indicate what can yet be done. The National Safety Council has compiled frequency and severity rates for the 506 units reporting for 1951. Presumably those reporting to this organization were making some effort to observe safety on their projects. Other statistics from 5,606 reporting units were compiled by the Bureau of Labor Statistics. These might be considered average contractors.

A comparison for frequency shows that the National Safety Council construction members had one disabling injury for each 47,800 manhours; or if the member had 100 men working an eight-hour day he would have one disability every 60 days.

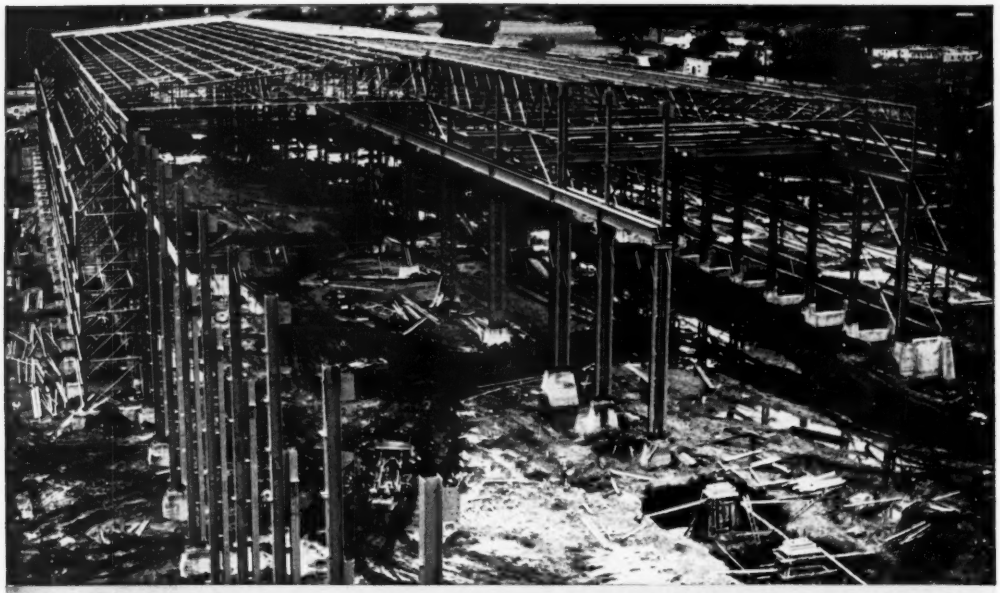
The average contractor, measured by the Bureau of Labor Statistics reports, had one disabling injury for each 24,400 manhours, or for 100 men working 8 hours a day he would have one disabling injury each 30.6 days.

For severity, the rates meant that for each 100 men working on a job for an NSC member two were being paid for a full day's work that was not being done because of time lost due to accidents, and for the average contractor there were three men.

Also, studies show that to offset each $1,000 accident or accident costs a contractor needs an additional contract of $40,485, based on Dun & Bradstreet's ratio of net profits to net sales.

Great progress in construction safety has been made through the years by the efforts of individual contractors, the A.G.C. and its chapters and branches, some of the surety companies, and many of the government agencies which award construction contracts.

The work which the A.G.C. has been doing in accident prevention during the past quarter of a century has been a good beginning. Increasing numbers of contractors are saving money through safety measures on their jobs. When all contractors practice safety, the benefits to themselves, to their workmen, to the industry and to the public will be tremendous.



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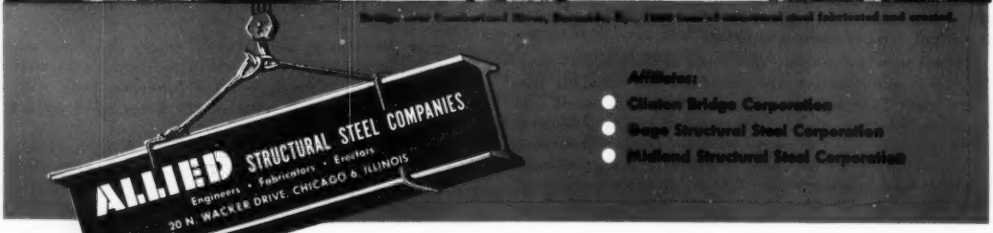

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Government, Industry Disagree on Time for Relaxing Controls

- Construction Easing Sought at Least by Jan. 1
- Fabricators Report Improved Structural Supply

» GOVERNMENT and industry disagreed last month on the time when federal controls over construction should be relaxed or terminated.

The National Production Authority on Oct. 3 announced a series of relaxations of construction regulations which will increase the amounts of controlled materials which may be self-certified for delivery to most kinds of construction projects May 1.

Members of a task group of the NPA Construction Industry Advisory Committee on Oct. 29 recommended that the effective date of these relaxations should be immediately, or no later than Jan. 1, because of the rapidly easing steel situation.

They further recommended that, if the controls were not relaxed immediately, NPA should continue to approve applications for projects and issue tickets for steel to be delivered in future quarters so that the planning and other advance preparations for projects could go ahead.

The NPA agreed to take under consideration the recommendation for advancing the effective date of the proposed relaxations. NPA Administrator Richard A. McDonald has pointed out that: "We want to be sure that by the time the relaxations are effective the materials situation will permit orders to be filled without serious difficulties."

Further discussion of the relaxation or termination of controls will be held at the next meeting of the full industry advisory committee, tentatively scheduled for Jan. 28.

Chamber Asks Relaxation

Immediate relaxation of the construction controls and their suspension Jan. 1 were recommended by the Construction and Civic Development Department of the Chamber of Commerce of the U. S. at a meeting Oct. 22. The committee, representing all segments of the industry, adopted a resolution stating:

"Government controls over the activity of the construction industry and the materials which it uses have justification only when there is a genuine shortage of materials for the defense program.

"Information from many reliable industry sources have convinced (the committee) that the rapidly easing materials supply situation is very close to the point at which all phases of the defense program can be carried out promptly without the further necessity of government controls over construction.

"The committee strongly recommends (1) immediate relaxation of construction controls during the balance of 1952 and (2) suspension of such controls on January 1, 1953, with the necessary protection of direct defense needs. This action is necessary in order to retain public confidence in controls as an instrument to be used only when needed for national defense. It is also necessary in order that the nation's largest industry may continue to maintain a reasonable level of employment."

The Associated General Contractors of America was represented at the meeting by President Arthur S. Horner, Past President William Muirhead, H. C. Turner, Jr., and Managing Director H. E. Foreman.

Fabricators Reveal Supply

Another recommendation for the removal of construction controls was made by the American Institute of Steel Construction, representing the fabricators of structural steel, at its recent convention.

The institute reported that there is "a continuing improvement in the supply of structural shapes and plates available for construction, and the requirements of claimant agencies for such material for construction are being filled."

Pointing out the necessity of taking the necessary preliminary steps to actual construction operations "to avoid a recession and widespread unemployment in the construction industry," the institute requested that the controls imposed by CMP Regulation 6 be removed.

NPA's Relaxations Now Slated for May 1

- Some Changes Made in Those Originally Set for April 1

» RELAXATIONS of construction regulations to increase amounts of controlled materials which may be self-authorized for delivery on and after May 1 were announced by the National Production Authority Oct. 3.

NPA stated it was announcing the amendments and directions to CMP Regulation 6 at that time so that builders might do preliminary planning for future construction and place advance orders with suppliers.

The relaxations originally had been scheduled for April 1, but were postponed another month because NPA felt it had to proceed with proper caution after the steel strike. The new Direction 8 to CMP Reg. 6 provides that starting May 1 self-authorization will be permitted for the following amounts per project per quarter.

1. For recreational, entertainment and amusement construction: 5 tons carbon steel (not to include more than 2 tons of structural shapes), 500 pounds of copper and copper-based alloys, 300 pounds of aluminum. Previously, no self-authorization was permitted for this type of construction. Also, foreign and used steel will be permitted for recreational construction in accordance with Article VI of Reg. 6.

2. For highways: 25 tons carbon steel (not to include more than 12 tons of structural); 500 pounds each of copper and aluminum. Present steel limit of 25 tons is not to include more than 2 tons structural.

3. For one- through four-family houses, per dwelling unit: 1,500 pounds of structural steel, plus 275 pounds aluminum, 200 pounds copper and 2,300 pounds carbon steel for homes with steel pipe water systems; 275 pounds aluminum, 400 pounds copper, 1,950 pounds carbon steel for homes with copper water pipe.

4. For multi-unit residences (walk-ups), per dwelling unit: 2 tons carbon steel (no more than 500 pounds structural), 200 pounds copper, 275 pounds

aluminum. At present no self-authorization is permitted.

5. For multi-unit residences (elevator type), per dwelling unit: 3 tons carbon steel (no more than 600 pounds structural), 225 pounds copper, 275 pounds aluminum. No self-authorization allowed at present.

6. All other construction: 25 tons carbon and alloy steel including structural (no more than 2½ tons alloy and no stainless), 5,000 pounds copper, 4,000 pounds aluminum.

All Other Construction

In regard to "all other" construction, NPA will eliminate May 1 the distinction now existing in the regulation between "industrial" and "all other" construction and will permit the same self-certification quantities for both. "All other" construction will include industrial, commercial, public, hospital, university, school, public utility, water and sewage, and transportation facilities.

At present, all of these types except industrial may self-certify 5 tons carbon steel (2 tons structural but no wide-flange beams or sections), 1,000 lbs. copper and 2,000 lbs. aluminum.

Building Equipment Limit Raised

NPA also announced that beginning May 1 the dollar limit on DO rating authority for purchase of non-controlled building equipment and production machinery will be raised. New limits will be: Recreational construction, $15,000 on building equipment, $5,000 on production machinery; all other construction, $100,000 on building equipment, $200,000 on production machinery; and no limit for building equipment on residential.

Transportation Facilities

The Defense Transport Administration alloted controlled materials for 1,697 construction projects with a value of $904,194,553 from the last quarter of 1951 through September 1, 1952, it was announced last month.

Each of the projects was screened to determine its essentiality to DTA's programs for railroads, waterways, trucking, transit, warehousing and port utilization. Aim of the programs was to provide facilities for the efficient flow of freight and passenger traffic, for necessary storage of facilities, and for a flexible and efficient port system.

Reduced Allotments, Starts Hit Industry

» ALLOTMENTS of structural steel for the first quarter of 1953 which generally permit continuation of all construction already started but only a limited number of new starts were announced last month by Defense Production Administration.

The only new starts permitted in industrial expansion, commercial and municipal construction, except small projects for which materials may be self-certified, will be those directly essential to the defense program, DPA announced, adding:

"Catching up with outstanding allotments of structural types of steel will take longer than with other types of steel because of the excessive backlog of structural orders already on the books at the time of the strike and because of the greater relative loss of production of structural steel."

Industry sources, however, indicate that the loss of production of structural steel was about half the percentage of loss for other types because only two fabricators were directly affected and many had inventories of supplies.

Atomic Energy Commission, Department of Defense, Defense Materials Procurement Agency and Bureau of Public Roads were given increased allotments in the first quarter over the fourth quarter of 1952 for new atomic energy, mining, and highway projects such as the Ohio Turnpike.

During the third quarter the NPA approved allotments of controlled materials for the construction of 500 commercial, religious, municipal and entertainment projects for an estimated cost of $100 million.

Tremendous Reduction

During the second quarter, the NPA had approved 1,662 projects of this type for an estimated cost of more than $626 million. The great reduction of approvals during the July 1 to Sept. 30 period was because of the steel strike, NPA explained.

Of the projects approved during the third quarter, approximately 50% were to receive their materials during the fourth quarter of this year; 40% in the first and second quarters of 1953; and 10% received materials during the third quarter.

Churches led the list with 154 projects approved for an estimated cost of $29 million. Retail stores were next with 77 projects costing $16 million. Approximately 50 entertainment and recreational projects were approved for $600,000.

New York had most allotments for 44 projects to cost $14 million. California was next with 38 projects costing $5 million, and Texas was third with 36 projects costing $6 million.

The allotments of structural steel for the third and fourth quarters of 1952 and first quarter of 1953 are shown in the accompanying table.

Structural Steel Allotments (Tons)

Claimant Agency	3rd Q.	4th Q.	1st Q.
Agriculture Dept	10,500	7,200	6,300
Army	14,000	11,200	9,800
Atomic Energy	12,591	72,678	87,629
CAA	6,000	3,500	5,600
Defense Dept.	170,598	173,000	185,000
Defense Electric Power	115,900	96,000	90,000
Defense Materials	24,350	13,600	25,760
Solid Fuels	18,000	13,600	11,900
Defense Transport	35,000	28,000	24,500
FSA Education	40,946	32,000	28,000
FSA Hospitals	24,800	19,540	17,500
Interior Dept.	670	536	501
Mutual Security	40,000	32,000	24,477
Petroleum	79,425	64,000	60,000
Public Roads	135,000	106,250	113,750
Veterans Adm.	3,100	2,480	1,943
NPA Facilities and Construction Bureau	296,688	263,948	167,250

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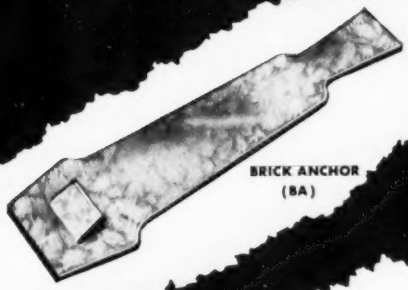
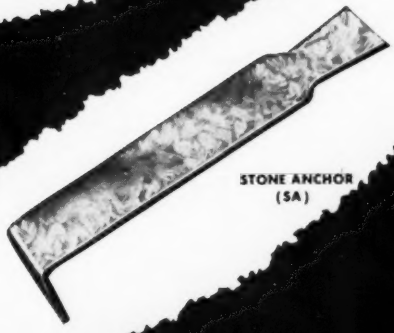
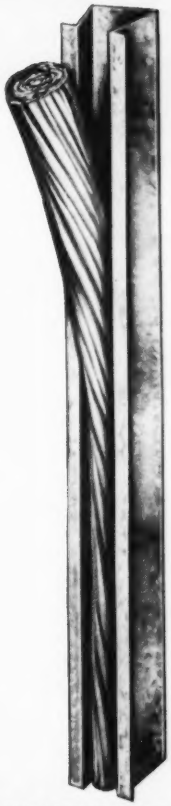


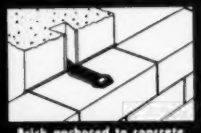
BRICK ANCHOR (BA)



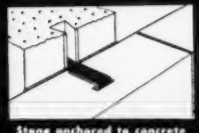
STONE ANCHOR (SA)



DOVE TAIL ANCHOR SLOT—(ASP OR ASF)



Brick anchored to concrete



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manufacturers

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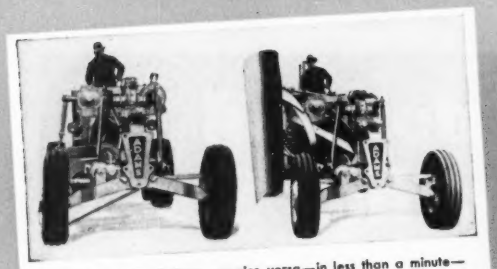

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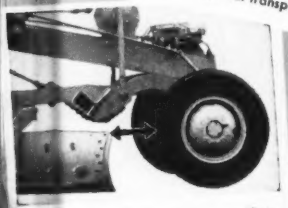

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Military Construction Planning Criticized

• Congressmen Ask Savings, Fewer Negotiated Contracts

» RESULTS of 18 months of study and hearings on the entire military construction program in the continental United States were reported Oct. 20 by the House Appropriations Subcommittee on Military Public Works. While conceding that some improvements had been made by the services, the committee called for more economy, claiming that reforms initiated by that group already have led to a saving of at least $72 million.

"Central areas of weakness" found in the program by the group are:

"(a) Lack of advance planning, (b) failures in standardization of repetitive-type structures, (c) lapses in attention to austerity standards, (d) too much use of the negotiated and cost-plus-fixed-fee-types contract for new construction, (e) lack of control in the conduct of certain CPFF contracts, (f) too frequent use of the change order and negotiated supplemental agreement, and (g) the uneconomic and violent peaking of obligations in the last month of the fiscal year for both year end and no-year funds."

Some Improvements Made

The committee did find that "many concrete steps are being taken to strengthen military construction procedures," listing as foremost: (1) appointment of a Director of Installations in the Defense Department to coordinate the military construction program, (2) "definite improvement" in approaching the goal of austerity, and (3) some advances toward standardization of plans and specifications within each service, particularly in the case of barracks.

Asserting that despite these improvements, a "satisfactory situation" still does not exist, the committee made the following recommendations:

• "One of the greatest fields for improvement is in the advance planning for military public works . . . The problem is to translate military requirements to the extent possible into concrete plans for construction. The committee has no illusions about the difficulty of this task. Nevertheless without it no program of rapid construction can take place with efficiency."

• " . . . standardization of those types of buildings which are found throughout all of the services. There is no reason why this goal cannot be reached immediately for the familiar structures found on all military and naval stations."

• "In addition to increased standardization a great deal of room for improvement exists in the fixing of base facility requirements."

• Disciplinary action "occasioned by disregard for careful use of public funds" and a complete report on such measures taken since July 1, 1950 before presentation of the military public works budget request for fiscal year 1954.

• Less haste at the planning, design, and contracting stages, and more care in use of the negotiated and cost-plus-fixed-fee contract.

• "The committee has noted that the experienced personnel of the Corps of Engineers is spread thin over the great volume of critical military construction. It recommends that more experienced officers be assigned to this sensitive work area. The high ratio of high ranking and more experienced officers in the Corps' civil-functions work has been noted."

• Correction of an all-service "feeling of compulsion to spend all available money of either the year-end or no-year variety before the end of the fiscal year regardless of the interests of economy," and "a greater refinement of the construction program to the point that the monthly rate of obligation could be plotted and staggered in more orderly detail."

• Complaining of a "foot-in-the-door technique" in obtaining initial appropriations which later had to be supplemented, the committee felt "that it is entitled to complete candor and to know the full projected program with respect to over-all construction plans at the time of initial requests for partial funding."

Types of Contracts

The committee dwelt at length on the different types of contracts, concluding that the services had made "excessive" use of the negotiated and cost-plus types during the 14-month "test period" studied.

Regarding the "traditional, lump-sum, advertised-bid contract," the committee said, "This well-known procedure does not need much comment. Everyone agrees that where time is not of the essence this form guarantees through the process of free competition that the government obtain the product at the lowest market price."

Testimony, the report said, indicated that the cost-plus contract is justified only where the need for construction is "so urgently acute" that planning and building must start simultaneously, or in rehabilitation work where it is unfeasible to draw plans and specifications.

The committee concluded:

"From its study the committee has not concluded that either the CPFF or the negotiated contracts are inherently bad. Both indeed have their purposes. The committee has not concluded that CPFF or negotiated contracts have not a place in a vast and varied construction program. There may well come a time when great speed in construction is necessary at any cost and such contracts may then be indispensable. It is believed, however, that the negotiated and CPFF contract could have been used with greater caution and in the future must be used only after the most careful judgment is made that the need for a particular installation is so great as to justify such use. . ."

"Unrealistic Completion Periods"

"The establishment of unrealistic completion periods for construction jobs has caused great confusion and waste in the past. For new construction this has caused excessive use of the negotiated and cost-plus-fixed-fee contract. It is impossible to set down a definite time schedule for military construction and eliminate all need for speed. This must of course be governed by the all-important needs of national defense in any given circumstance. However, it must always be kept in mind that great projects cannot be built in haste without a considerable increase in cost and great chance for confusion, inefficiency, and waste. In assigning completion dates these two factors must be carefully balanced against each other. Lack of careful judgment in this regard has proven most costly. The committee has been shown cases where less haste at the planning, design, and contracting stages would have produced not only a better but a quicker job. In view of the dangers involved at least the existing legal and administrative restrictions on the use of CPFF and negotiated-type contract should be maintained. . ."

Air Force Seeks Construction Economies

- Will Send Contractors to France to Expedite Work There

» THE AIR FORCE last month took two actions in its construction program—one to secure maximum economy and efficiency in its entire installations program and the other to expedite construction of its bases in France.

The actions, announced by Secretary Thomas K. Finletter, were:

- Establishment of a committee of civilian and military members to review the Air Force construction program and make recommendations to the secretary "aimed at securing maximum economy in the expenditure of construction funds and more efficient building of air base facilities."
- Award of a $4-million contract to a group of three construction contractors to expedite and supervise construction of bases in France.

Program Will Be Reviewed

In announcing appointment of a Projects Installations Committee to review its program, the Air Force said, "Last June, Secretary Finletter advised the Subcommittee on Department of Defense Appropriations of the Senate Committee on Appropriations that the USAF was initiating action to establish such a committee."

Civilian members, selected "because of their wide experiences in the construction field," are:

Assistant Secretary of the Air Force E. V. Huggins, member ex-officio and chairman; John P. H. Perry, USAF Deputy for Installations, vice chairman; Fred J. Driscoll, George F. Driscoll Co., New York City; G. Dewey Hynes, construction vice president of the Equitable Life Assurance Society; John P. Riley, coordinator of construction for the New York City Board of Education; Albert L. Baum, Sr., of Janos, Baum and Bolles, New York consulting mechanical engineers; Dwight W. Winkelman, D. W. Winkelman Co., Syracuse, N. Y.; Max Abramovitz, Harrison & Abramovitz, New York architects; and George H. Miehls, Albert Kahn Associates, Detroit architects and engineers.

(The Driscoll and Winkelman firms are members of The Associated General Contractors of America. Mr. Winkelman is a past president of A.G.C.).

Military members of the committee are Maj. Gen. John M. Weikert, assistant deputy chief of staff, Operations, USAF headquarters; Maj. Gen. M. J. Asensio, USAF director of the budget; and Brig. Gen. John R. Hardin, assistant chief of Army Engineers for military construction.

To aid the committee and conduct detailed research, the Air Force engaged as a joint venture the architect-engineer firms of Deleuw, Cather & Co. of Chicago and the J. E. Griner Co. of Baltimore.

To Speed Up French Bases

To supervise and speed up construction of air force bases in France, the service awarded a one-year, negotiated contract of $3,924,000 to a group of construction firms composed of the Raymond Concrete Pile Co. and the Walsh Construction Co., both of New York City, and Brown and Root, Inc., Houston, Texas. (All three are members of the A.G.C.).

Although the Army Corps of Engineers is the construction agent for the Air Force, the Corps does not participate in Air Force construction in Europe under commitments of the North Atlantic Treaty Organization, the USAF said. Therefore, establishment of this group, known as Construction Management and Engineering Associates, "will provide the technical assistance and management necessary for Headquarters, USAFE to handle the complex problems associated with the extensive air base construction program in France."

CMEA, with offices in New York, will assign a management group to USAFE headquarters at Weisbaden, Germany, which will report directly to Maj. Gen. T. H. Landon, USAFE deputy commander-in-chief.

The group will function through an operating committee made up of one or more officers or directors from each of the three participating firms, and at least one of this committee will be required to go to France a minimum of once a month. On demand of this operating committee, personnel of the three firms will be furnished to CMEA as required.

The Air Force said:

"Under terms of the contract, CMEA will be required to provide a technical review and analysis of air base construction plans, criteria and specifications and to make recommendations for revisions, improvements or other changes. In addition, it will furnish Headquarters, USAFE, with managerial supervision of physical construction operations at each base site including a comparison of construction progress relative to established schedules and recommendations related to increased economy and efficiency. CMEA also will prepare cost estimates for various construction projects and will compare these estimated costs with actual bid prices."

Creedon Powers Outlined in Defense Post

» THE NEW director of installations for the Defense Department (Frank R. Creedon, formerly assistant administrator of the National Production Authority), has been given appropriate authority to prescribe and implement execution of policies governing all military construction.

A directive issued by Defense Secretary Lovett permits appointment of one or more deputy directors and the establishment of such continuing or temporary committees and advisory groups as needed to assist the director in carrying out his duties.

Duties of the director are to:

1. Maintain direct surveillance over planning and construction.

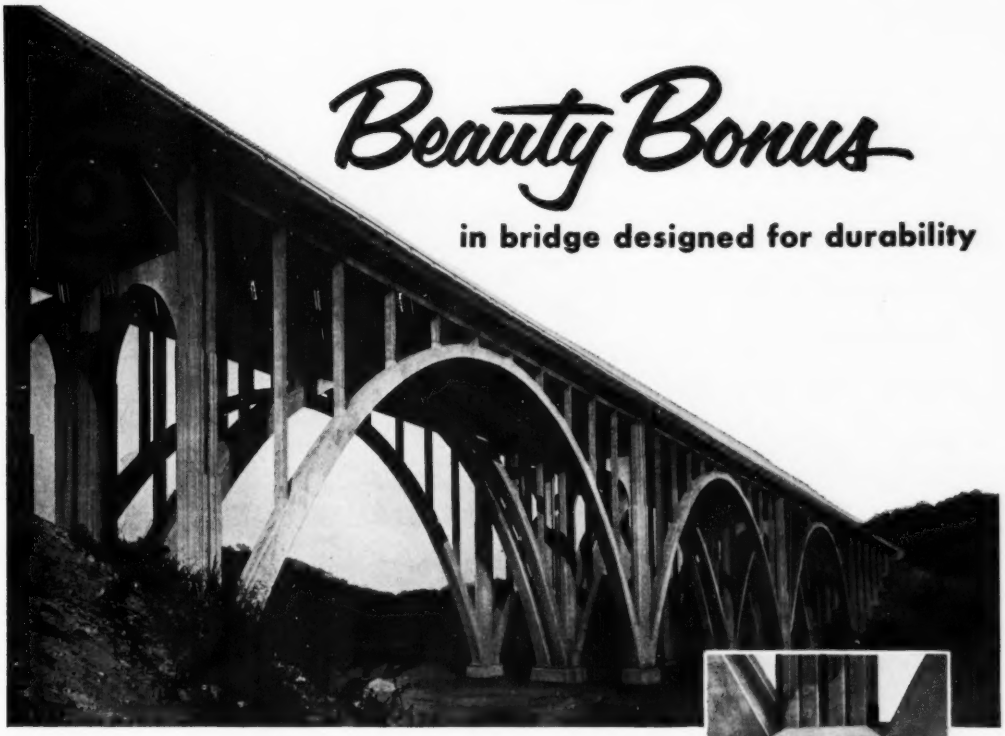
2. Report to the secretary as necessary regarding the status and progress of such projects.

3. Develop the department's policies and coordinate activities of the military departments in recording inventories, utilization and condition of facilities in existence, under construction, and authorized and funded.

4. Develop policies for computation of program requirements, issue instructions and guidance to the military departments for preparation of programs, recommend to the secretary those to be approved and presented to Congress, and assist in preparing and presenting to Congress proper appropriation and authorization requests.

5. Develop uniform design criteria and construction standards with emphasis on cost reduction.

6. Resolve conflicts between military departments regarding a single or adjacent installations.



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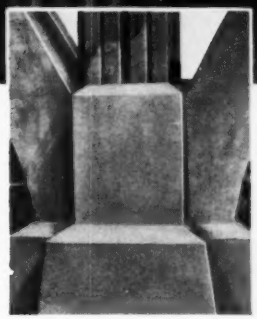

Superior surface appearance of concrete made with Duraplastic cement shows in this close-up view of an arch pier. Commercial Street Bridge, Penn-Lincoln Parkway, Pittsburgh, Pa. Designed by Pennsylvania Dept. of Highways. Contractor: Dinardo, Inc., of Pittsburgh.

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Construction Hits $27 Billion

New construction volume, with more than $3 billion put in place during the month of October, totals slightly over $27 billion for the first 10 months of 1952, according to estimates of the Commerce and Labor Departments. The annual rate is running at almost $1 billion above last year's dollar volume, with construction amounting to about $3 billion per month for the past five months.

The agencies have just completed revising the volume figures for the year thus far, reducing the total by about $200 million, mostly due to a smaller volume of military and naval work than had been estimated.

Meanwhile, the Commerce Department's office of business economics reported that the pace of economic activity in general has quickened due to the usual seasonal pick-up and the recovery of industries affected by the steel shutdown.

Renegotiable Contractors

Of the 14,000 contractors and subcontractors whose defense work in 1951 made them subject to renegotiation, only about one-half will be renegotiated, the Renegotiation Board estimates.

Samplings from the more than 20,000 reports received from those whose business years ended before Jan. 1, 1952, indicate that 46% had receipts above the statutory minimum of $250,000, and that the profits of about one-half of these "clearly could not be considered excessive." The remaining 7,000 will be processed to determine whether excessive profits were made.

Two possible conclusions were posed by the board on the basis of its examinations so far: (1) that small business is participating heavily in the defense program, and (2) that pricing policies applied by agencies and improvement in procurement techniques since the end of World War II are reducing the possibilities of realizing excessive profits on defense contracts.

1.6 billion bd. ft. of timber cut on national forests in the third quarter, valued at $22.7 million, exceeded the volume and value for any other single quarter on record, the Agriculture Department reports.

Engineers' Concrete Standards Reviewed

- Task Unit Studies Revised Documents with Army Officials

» SPECIFICATIONS and standard practices for concrete work on Army Corps of Engineers' projects are being reviewed by the Corps and The Associated General Contractors of America.

The Office of Chief of Engineers is revising its documents, "Guide Specifications for Concrete" and "Standard Practice for Concrete." Brig. Gen. C. H. Chorpening, assistant Chief of Engineers for civil works, in sending copies of the revised documents to the A.G.C. for review offered the opportunity for representatives of the two organizations to discuss constructive suggestions by contractors.

The documents were reviewed by members of the A.G.C. Task Unit on Corps of Engineers Specifications, a part of the Contract Forms and Specifications Committee. J. A. Henderson, United Construction Co., Winona, Minn., is chairman of the unit.

A meeting of the unit was held in Chicago October 17 for the discussion of contractor recommendations. Following this meeting, the recommendations were consolidated for presentation to the Corps.

Representatives of the Corps and A.G.C. met October 24 at the A.G.C. national office. Opening the meeting, held in the association's committee room, Mr. Henderson expressed his group's appreciation for the opportunity to review the documents before they are officially adopted.

During the all-day meeting several changes and modifications in the guide specifications and practice manuals were recommended by the A.G.C. representatives.

At conclusion of the meeting, Col. William Whipple, executive officer, Civil Works Division, stated that he was pleased at the cooperative spirit which was shown, that he believed practical and constructive suggestions had been made and that they would be given serious consideration by the Corps in the completion of the manuals.

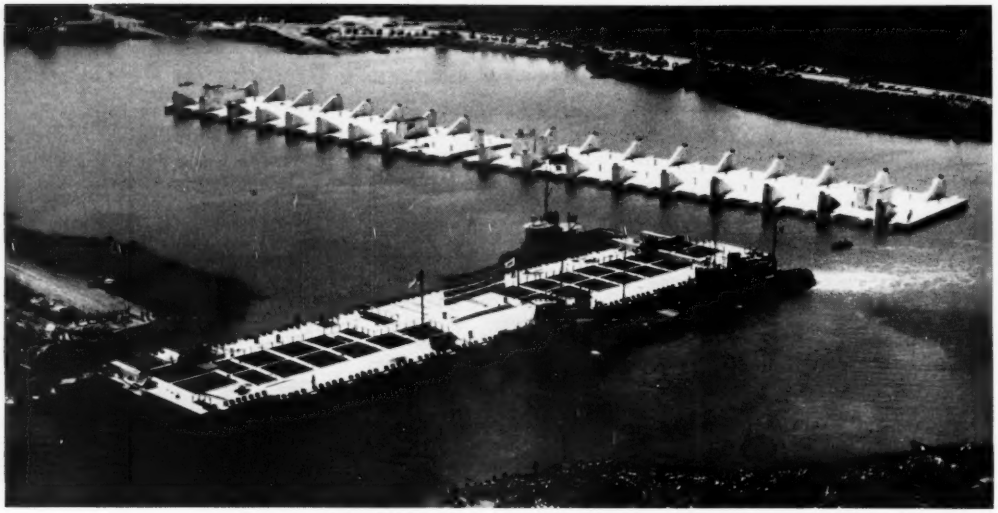
At the Chicago meeting the A.G.C. was represented by Mr. Henderson, William H. DeButts, C. F. Lytle Co., Sioux City, Iowa; Morris E. DeWitt, Porter-DeWitt Construction Co., Poplar Bluff, Mo.; Assistant Managing Director J. D. Marshall and James M. Sprouse, national staff.

At the Washington meeting the A.G.C. was represented by Mr. Henderson; Mr. DeButts; B. E. Rhoads, Dravo Corp., Pittsburgh; Francis M. Tompkins, Chas. H. Tompkins Co., Washington; Mr. Marshall and Mr. Sprouse.

The Corps of Engineers was represented by Col. Whipple; Lt. Col. A. C. Grant, Field Group, O.C.E.; J. R. Gilbert, chief, and G. L. Otterson, engineer, Concrete Control Branch.

Representatives of the Army Corps of Engineers and A.G.C. are pictured at A.G.C. headquarters discussing improvements in concrete specifications. Clockwise around the table, starting at left with J. A. Henderson, are James M. Sprouse, Lt. Col. A. C. Grant, Francis M. Tompkins, G. L. Otterson, J. R. Gilbert, B. E. Rhoads, Wm. H. DeButts and Col. William Whipple.

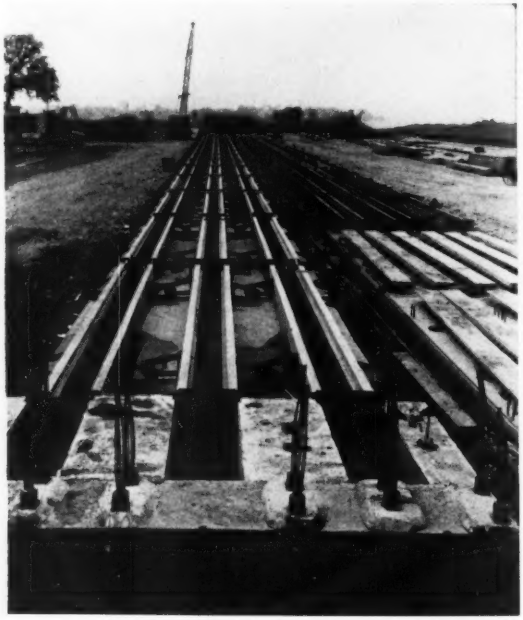
For New York's Amazing Pier 57



First section of Pier 57 starts its 38-mile trip down the Hudson River. More than 50,000 barrels of Lehigh Cements are being used in the construction of the pier.

Owner: **City of New York, Dept. of Marine & Aviation**
Consulting Engrs.: **Madigan-Hyland, New York**
Contractors: **Merritt-Chapman & Scott Corp. and Corbetta Construction Company**
Ready Mixed Concrete: **Colonial Sand & Stone Co.**
} **All of New York**

Prestressed Concrete Stringers made with LEHIGH EARLY STRENGTH CEMENT



Prestressed Stringer bed ready for concrete. This is one of four, each consisting of a 5" slab, 10' wide, 384' long. Side forms were made of concrete instead of wood for faster stripping and resetting.

Prestressed concrete has taken another step forward. Now it has been used for the 3300 main deck stringers of New York's new Pier 57, as the most practical and economical concrete design for the extraordinary load requirements.

In casting the stringers, Corbetta Construction Company used mass production methods and Lehigh Early Strength Cement. Their operational cycle called for setting forms, prestressing and pouring 48 stringers on one of four casting beds each day. Stringers were removed and forms re-used on the fourth day after each pour.

Without the use of Lehigh Early Strength Cement, more than twice as many casting beds would have been needed . . . more than twice as many concrete side forms.

This is another example of the advantages of Lehigh Early Strength Cement in modern concrete construction methods.

LEHIGH PORTLAND CEMENT COMPANY, Allentown, Pa., Chicago, Ill., Spokane, Wash.

Lehigh CEMENT

Merits of the Contract Method Outlined to Municipal Officials

- Force Account Used as "Defensive Measure"
- A.G.C. Panel Solicits Engineers' Cooperation

» A FRANK and enlightening panel discussion of the relative advantages of the contract method and the force account method of construction was conducted at the recent 54th annual meeting of the Michigan Municipal League at Grand Rapids, with two A.G.C. representatives presenting the one point of view and two city engineers the other.

According to the public works officials, construction of projects by force account is being carried on in several Michigan cities as a "defensive measure" in retaliation for alleged undesirable bidding practices and unsatisfactory workmanship.

Joint Cooperative Committee formed by A.G.C., American Public Works Assn.—Page 61

Industry panel members made no effort to uphold any shortcomings of some contractors whose actions may have contributed to the arguments for force account work. It was pointed out, however, that in a majority of the instances the adoption of day labor methods does not correct the human failures involved, and that the temporary successes claimed by some public works officials in constructing their own improvements could not be considered an economic guide for indefinite periods.

It also was noted that even in those force account programs which may seem successful, their economic justification by attempting to cite comparative cost figures will usually prove futile if the public works official includes overhead expenses justly comparable to those necessary for the contractor.

The proponents of force account construction on the panel limited their recommendations to operations that could be carried on with equipment that normally could also be used in maintenance. The panel members believed that widespread use of force account construction could not produce either the economies or the workmanship desired.

Attention of the contractor representatives was called to the need for greater realization by contractors of their responsibilities to the public and their obligations to deliver quality workmanship.

Walter L. Couse, Detroit, past president of The Associated General Contractors of America, informed the engineers of the A.G.C.'s continuous program to promote such a program and stressed the importance of cooperation of responsible engineers.

The other contractors' representative, C. J. Carroll, executive secretary of the Michigan Road Builders' Association, A.G.C., in the period of summation closing the panel session, invited the engineers to join with contractors in mutual consideration of construction problems, standardization of design, specifications and methods of street construction, and adoption of a realistic method of qualifying contractors doing their work.

City Engineer Ray Fry, Midland, was moderator, and the public works panel members were Ray Trebilcock, city engineer, Coldwater; and Allan Carlysle, city engineer, Port Huron.

The talks presented by Mr. Couse and Mr. Carroll follow.

Contract Method: Skill, Competition Initiative

Statement by Walter L. Couse

» THERE CAN BE common agreement that all public works projects should be designed to fit their purposes most effectively and should be constructed with maximum efficiency so that public funds are conserved.

It is also a human desire on the part of all contractors that the project be built by the contract method. There are also sound reasons why you, as public officials, with your every action and expenditure subject to public inspection, should be interested in having your work—even some maintenance work—done by the contract method. Likewise, the public should insist on this, so that its funds, provided by taxation, can be safeguarded and expended in the most economical manner.

When public projects are designed by competent engineers or architects, then publicly advertised and awarded to the lowest qualified bidder, the public receives full benefit of competition among skilled and experienced contractors. These construction organizations were developed through the efforts, and trained from the wisdom and experience, of construction management specialists. The mere fact that a man is a qualified engineer does not make him a construction manager. The heads of reliable construction firms have had to fight their way to the top in a very competitive system and are ordinarily far beyond the average engineer in ability to manage and run the work involved in the construction of even moderate sized projects. Therefore, the system of force account work can never be as economical as the competitive contract method.

There are several other real factors in determining the greater economy of the competitive system over that of force account work. You have undivided responsibility with no uncertainty that the job will not be completed as planned and *within the estimate established*. With a competitively bid lump-sum contract the contractor accepts legal and financial obligations which free the owner—which in municipal work means the public—from liabilities.

Force Account Costs More

Private contractors, while offering higher wage scales, do not work—or pay—their men in foul weather, whereas city employees are paid good weather and bad weather—the year round, because invariably civil service or public policy of the desire for vote support at election time keeps these men on. Providence, Rhode Island, in an expert cost analysis on watermain laying, discovered that 38.5% of the extra cost by doing work on force account was due to this latter reason.

Attainment of maximum efficiency in construction—and thereby lowest costs—depends to a large degree upon a uniform labor relations policy over a period of time. If specialty trades are required the contractor can reach out into the unions involved and pick up the individuals he requires with their known skills. When the work is

completed he passes them to someone else requiring the same skill—but they are off his payroll, off his overhead. Public governments are in no position to do this—they must maintain at least a reasonable number of men in all skills—throughout the year, oftentimes doing completely different work at some periods to fill in. These men are a saddle on your neck continuously, and if not kept fulltime in their trade, lose the skill oftentimes required of them and in time become second rate artists of their trade through lack of continuous practice.

Many states and municipalities are extending their contract work into maintenance as well as new construction, and are finding it to their definite advantage from all angles. New Hampshire, Ohio, Kentucky, Minnesota are some of the states so doing. In North Carolina intensive studies were made by the Bureau of Public Roads and the state, and the results were never in favor of the force account system.

Cites BPR Figures

In 1934, for example, quoting C. N. Connor of the B.P.R. after a study of 53 different projects in 46 states:

"The total cost of construction by force account work ran 18% above bid prices for the same projects."

Some of the jobs ran as high as 85% above contractors' bid prices. Mr. Connor, in his report, went on to say, and I quote:

"Employed supervision, not having a monetary interest, does not have the same incentive as a contractor who enjoys the financial rewards and to whom losses are a personal penalty. He is spurred by the knowledge that he must maintain efficiency or be forced out of business."

"The test made by the Bureau of Public Roads to determine the relative economy and efficiency of highway construction by contract and by day labor, shows that construction by contract is more economical than when done by day labor under the supervision of public agencies."

In public buildings this is even more true, because of the more skilled trades required and the greater amount of skilled buying of special items that must be obtained.

The construction industry throughout the history of the United States has had, still has, and always will have a tremendously important part in the development, growth and progress of the nation and its communities, and will serve as a medium through which investment can be made in facilities which serve people.

The construction industry has kept pace with and helped in the development of practically all other industries, and is able to make use of their discoveries to build constantly better facilities with greater speed and efficiency, all at its own expense and not that of the taxpayer.

Labor has also kept pace with the developments of new materials, new and greater designs. Workmen have had to be continually trained in new techniques while preserving their ancient skills. This has been done under a comprehensive program. American workmen have fully measured up to the challenge.

Industry Is Large, Versatile

The industry is of huge size, and produces an amazing variety of products under every conceivable circumstance, yet its methods and internal organization have developed, often with growing pains, until they are of such flexibility that the industry can execute any structural need of the people any place in the world.

By experimentation through the years and now by cooperation between such organizations as the American Society of Civil Engineers, the American Institute of Architects, The Associated General Contractors of America, and many others, there has developed a type of joint-cooperative relationship within the construction industry which best fits its purpose, and which permits fair and equitable treatment of all those who are connected with construction operations. This experimentation and development work is not possible by force account agencies or their outlets.

Partners With Engineers

As general contractors, who were the logical development in the industry to fulfill the need for organizations to take complete responsibility for the construction of projects and to correlate all of the skills, materials and machinery required, we look forward to an even greater century in partnership within engineers and other designers.

The engineer's qualities of skill, imagination and courage have been complemented by the initiative of the contractor in devising new methods and together they form a team today which continues its advance toward an ever expanding vision of a greater United States of America. Let us not tear this effort down by blind keeping of costs and the desire to keep voters on the public payroll. We need an incentive for more initiative, not more public wastage of taxes.

Day Labor Bucks Laws of Economics, Behavior

Statement by C. J. Carroll

» ANY APPRAISAL of force account construction of public works must recognize that such activity is government in business. Day labor construction, when stripped of all its pseudo-finery, depends on the same social welfare philosophy that guides the most ardent social reformer in his preaching for government ownership and control as a panacea to all industrial ills.

In making this observation, we do not intend to condemn force account construction by simply tagging it with the emblem of "statism" or "socialism." We do believe, however, that no industrial operation can survive indefinitely if it selects for foundation material, rules directly contrary to the laws of economics and normal human behavior. The importance of construction is illustrated by the fact that it continually occupies the number one or two position among the nation's largest industries.

There exists a natural tendency among all engineers, public or private, to build something. The presence of this trait in the engineer's make-up permits him to occupy a position in government where his opinions receive weight and respect. The shortcomings of force account construction do not grow from those of individuals but rather from the contradiction of economic laws that can be neutralized only for short periods of time by energy of the individual.

Highway Industry Stressed

Our experience in construction and engineering activities has, over the past thirty years, been devoted principally to the development of highways, streets, bridges and airports. Our remarks and illustrations are directed

ZONED EQUIPMENT:

Modern as the jet field it builds

Jet planes need elbow room. Wherever swept-back jets hurtle into the sky or thunder home to roost, they need plenty of open space. A few miles north of Youngstown, the Air Force has flattened and reshuffled many Ohio acres to give the jets the room they need.

To pave the way for the streaking planes, Allegheny Asphalt & Paving Co., Pittsburgh, excavated 1,300,000 yards, embanking 821,000 yards and relocating 1½ miles of roads. For the jets, this will mean 3,000 more feet of runway, 3,000 extra feet of taxiway.

For the high-speed jets the company used high-speed methods. It employed a fleet of 34 "Caterpillar" Diesel Tractors, four No. 112 Motor Graders, Scrapers, 'Dozers, sheepsfoot tampers and other auxiliary equipment. Why "Caterpillar" products? Because they're designed and built for economical, *zoned* earthmoving.

Three zones—A big job needs standardized equipment designed for the three principal construction zones. "Caterpillar" offers a line created for this progressive method of construction.

For high speed, long hauls on good haul roads, Allegheny utilized its four DW21 wheel-type Tractors with No. 21 Scrapers and some of its 27 D8 Tractors for push loading.

For the shorter distances and rougher ground of the middle-speed zone, the D8s were hitched to scrapers.

And for the short, rough, important power zone, it had available the D4, D6, D7 and D8 Tractors with 'Dozers.

Helping in all three zones were the four talented No. 112 Motor Graders, maintaining haul roads, ditching, banking and filling. Constantly at work . . . constantly useful.

A fleet of powerful big yellow machines roared over the ground leaving in their wake a Herculean job of earthmoving. Now graceful jets flash into the sky leaving a wispy vapor trail scribbled in the heavens.

Power zone operations by D8s. Foreground, powerful D8 is spreading while in the background a D8 is pulling a sheepsfoot tamper.

Middle-speed zone operations by D8 and No. 80 Scraper. This unit works quickly and smoothly for shorter haul distances and rougher ground.

High-speed zone operations by a big yellow DW21 with No. 21 Scraper. High speed and big capacity of this unit equip it for this zone.

Versatile No. 112 Motor Graders are helpmates for other "Caterpillar" equipment in all three zones. Here they are spreading on runways.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

principally to this type of construction.

The highway construction industry, as it exists today, is comparatively young. During the early periods of highway development when public demand was great, contract construction was limited to a small field of contractors willing to bid upon such work because of its uncertainties. By reason of this limited field of private contractors, public agencies proceeded to organize construction units and started building their own streets and roads. This type of construction continued until the same public agencies became aware of the rapid development of the private construction industry and were receiving bids lower than the costs they were experiencing.

Michigan Abandoned System

During the years 1929 and 1930 the Michigan State Highway Department and the Wayne County Road Commission abandoned construction by force account methods and disposed of the large amount of equipment they then had on hand. Action by the Department of Public Works of Detroit preceded this state and county decision when the construction revolving fund provided was dissipated in attempting to meet private competition.

A national experiment was conducted by the U. S. Bureau of Public Roads during 1933 and 1934 when fifty-three highway projects were selected for day labor construction operations. Selection of this work was made by drawing after opening bids from private construction firms. Since this choice was made by chance, no slanting of bid figures by contractors was possible. The costs secured and the dates of completion of the projects under force account construction left no doubt in the minds of all public officials concerning the economies of the contract method of doing such work. The total cost of the projects in the experiment ran 18% above the bids of private industry with several jobs going as high as 85% above the contractors' quotations.

Today another experiment in the construction of secondary roads by force account methods is under way in North Carolina. This effort, born of political expedience, will undoubtedly fail by reason of its political significance and non-competitive effort. Much to the discomfort of those directing the work, the Bureau of Public Roads has insisted that overhead items be applied to this work in making comparisons with contract construction costs. The sincerity of these so-called public-minded officials would provide a greater amount of confidence if the financial success of such improvements were backed by the financial resources of these same individuals as is the case of the private contractor.

Elsewhere throughout the country repeated efforts are being made to continue force account construction although many of these same agencies had already found such operations unprofitable to the taxpayer. This insistence for day labor parallels the action of self-styled inventors who, despite the laws of mechanics concerning friction in man-made machines, have repeatedly bombarded the national patent office with schemes for producing perpetual motion by methods they believe will succeed where all others have failed. It would be of great benefit to the taxpayer if the action of the patent office in rejecting these petitions without consideration could be applied to proposals of construction-minded public officials.

The standard of living here in the United States has been built upon a free economy made possible by our particular type of government and implemented by an open competitive market. Widespread construction of public works became a possibility both by reason of this freedom of individual effort and the rewards attainable from such efforts. This has been made possible by American individualism rather than European collectivism. There are many critics of our economic practices of free competition, but no one speaks against the standards of living it has made possible.

Force Account Fallacy

It is contended by public officials promoting force account construction, that by so doing the community will be free from the contractor's profit and will be further exempted from the many taxes the contractor normally assumes. Savings such as these are completely washed out when organizational competition and individual initiative is eliminated from the work. Observations of industrial progress in other nations have told us repeatedly that such progress does not flourish without competition and that when individual initiative is removed from such work, it is replaced by mental, physical and moral indolence. This normal human behavior is the basic reason for the success experienced in construction by contract and at the same time becomes the dead-end street on which force account or day labor construction dies.

When this "normal human behavior" of the individual undergoes a subconscious change in all its actions and no longer requires the profit or incentive motive for development, then benefits may be expected from government operation of the construction industry. Until that time we will continue to believe that you cannot get rid of friction in mechanics nor can you remove politics from government.

Make Specs Clear, Snow Tells Engineers

» THE IMPORTANCE of accurate, concise and clearly defined specifications to properly and economically constructed public works was impressed on city officials at the 54th annual meeting of the Michigan Municipal League at Grand Rapids by Welton A. Snow, manager of the Building Contractors' Division, The Associated General Contractors of America.

Mr. Snow pointed out that poor specifications give rise to delays, misunderstandings and controversies in the course of a job, and necessitate contingency amounts in bids.

Mr. Snow listed three other important points for "specs" writers:

1. Specify results rather than the methods of the contractor.

2. Avoid use of the so-called "catch-all" clauses. Don't "pass the buck" to the contractor and make him responsible for any discrepancies and omissions in the plans and specifications.

3. Follow suggestions in the document, *A Suggested Guide to Bidding Procedure,* developed by the A.G.C. and American Institute of Architects, in using the term "or equal."

In order to avoid uncertainty and misunderstanding when using this term the document recommends specifying the particular material desired if the owner is advised and willing to risk a non-competitive price, or specifying two or more materials, any one of which is acceptable.

Mr. Snow also discussed recent movements toward improving specifications in general, describing work of the A.G.C. and the A.I.A.

HEAVY CONSTRUCTION EQUIPMENT—FOR SALE

Located at Site of Downsville Dam, Downsville, New York
(Contract 401—Board of Water Supply of the City of New York)
Certain groups available immediately; others within next 3–4 months

96—Euclid Bottom-Dump Tractor-Wagon Units. Models 43FDT, 38FDT, 67FDT, 71FDT. All with G.M.C. 671 engines. All with Mod. 58W 13 Cu.Yd. Wagon units.

9—Euclid Model 8TD Rear Dump Units—16.8 Cu.Yd. capacity—56Y Body with side extension. All with Cummins 275?5P Engines.

7—Euclid Model 49FD Rear Dump Units—12 Cu.Yd. capacity. All with G.M.C. 671 Engines.

3—Euclid Loaders. 1 Model 3BV; 2 Model 9BV. Also 1 Model 109 W Dolly for 9BV Loader.

5—Graders. 1—Allis Chalmers Model AD-3; 4—Caterpillar Model 12.

1—Lima Model 604 Crane, 90 ft. Boom, 1½ Cu.Yd. Bucket.

3—Bucyrus-Erie Model 54-B Shovels—2½ Cu.Yd.

1—Bucyrus-Erie Model 54-B Shovel and Dragline Combination—2½ Cu.Yd.

2—P. & H. Model 1055 Shovels—3 Cu.Yd.

1—Lima Model 1201 Shovel and Dragline Combination—3½ Cu.Yd.

1—Lorain Model TL20 Moto-Crane, with Shovel Digger Attachment.

1—Northwest Model 25 Combination Shovel/Crane/Dragline/Backhoe, ¾ cu.Yd., mounted on Northwest-Dart 10-wheel Carrier.

1—Complete Shovel front attachment—for 2 Cu.Yd. Lima Model 802 Shovel.

23—Caterpillar Model D8 Tractors with Bulldozer P.C.U. attachments—Series 8R, 1H, 2U.

2—Allis Chalmers Model HD19H Tractors with Bulldozer and P.C.U. attachments.

3—International Model TD24 Tractors.

4—LeTourneau Model C1H Scraper Units.

11—Sterling Model HCS 297 Rear Dump Earth-Hauler Units, 16 Cu.Yd. Boulder Dam Bodies, Cummins HB6 Diesel Engines. Four are presently mounted with 4,000 gallon steel water tank, catwalk and spraybar.

1—LeTourneau Model K30 Rooter.

6—Rock Rake Attachments for D8 Tractors.

4—Rome Model 6MM Heavy Duty Disc Harrows, 6 disc sections, 28" diameter.

19—Sheepsfoot and Miscellaneous Rollers, including 5 Southwest TD2-102 Sheepsfoot; 6 McCoy USHD67 Sheepsfoot; 2 McCoy USHD55 Sheepsfoot; 2 Southwest TD3-0 converted to Sheepsfoot; 3 Special C.B. 5' x 6' Smooth Land Rollers; 1 Special C.B. 3-Drum Smooth Roller.

6—Buckets—various types and capacities (Digging, Drag, Clam, Concrete).

6—Air Compressors (Ingersoll-Rand, Jaeger, Brunner)—various models and capacities.

7—Tampers, gasoline driven:—1 "Barco" Model BR5; 6 "Master" Model G-1.

28—Kohler Light Plants—assorted sizes and models—including Models D, 3A21, 3M21, 5A21, 5L21, E.

4—Worthington Deep-Well Type 12 QG-H2 Turbine Pumps, 1500 GPM capacity at 110' TDH. Nos. 1349448/49 are Electric Motor Driven; Nos. 1349450/51 are Diesel Engine Driven.

20—Miscellaneous Pumps—various makes, sizes, and models—capacities 1½" to 6".

1—Rex Model 160 Double Pumpcrete Machine—Serial CZD107. Also large lot of 7" diameter pipe in straight sections and specials.

1—Gardner-Denver Grout Machine Model EF-FS, 10" x 4" x 10", 14 c.f. capacity, with line oiler and agitator.

1—Robins H.D. Scalping Screen, fitted with H.D. perforated plate and skid rails; 6" square openings; powered by LeRoi Gasoline Engine; electric starter and generator, clutch and stub shaft.

1—Butler 200 Cu.Yd. capacity Batching Plant—3 aggregate compartments—55 ft. Elevator; 100 bbl. Cement Bin, 45 ft. Screw; 1200 bbl. Storage Silo.

1—30 ft. Unit Steel Tunnel Forms, 13' x 13', non-telescopic, straddle type traveller.

1—Lot Blaw-Knox Steel Panel Concrete Forms—about 20 Tons.

1—Day-Smith Type 100 Lugger Crane.

1—Oshkosh Tractor, 4-wheel drive, mounted with Gar Wood US6A Hoist and Crane.

1—5 ton Chisholm-Moore Overhead Crane and Hoist.

1—Lambert Electric Mine Hoist, single drum, 24" Diameter, 20" face, 10" flanges—6,000 lbs. capacity @ 400/450 R.P.M.

1—Complete "Grizzly" Earth Processing Plant—Designed by Robins Engineers Division to handle 1,350 Cu.Yd. per hour of "A" impervious type material. Complete descriptive details on request.

1—Complete "Grizzly" Earth Processing Plant—designed by Robins Engineers Division to handle 2,600 Cu.Yd. per hour of "B" pervious material. Complete descriptive details on request.

Above list covers principal groups of equipment offered. In addition, have large assortment miscellaneous tools and equipment such as air tools, concrete vibrators, power saws, welding machines, shop equipment. Also large inventory of miscellaneous Repair Parts for major equipment groups listed, such as Caterpillar, International and Allis-Chalmers Tractors; Euclid, Sterling, and LeTourneau equipment; General Motors, Cummins and Buda Engines; Bucyrus-Erie, Lima and P. & H. Shovels, etc. Also a wide variety of electrical equipment, transformers, wiring, fixtures, etc.

Address inquiries to:

Peter M. Bianchi, *Project Manager*

BIANCHI, CENTRAL, MUNROE-LANGSTROTH, RUGO

A Joint Venture

DOWNSVILLE, NEW YORK

Tel: Downsville 3-1101

GM DIESEL CASE HISTORY No. 519-18

USER: Wissota Sand and Gravel Company, Eau Claire, Wisc.

Firm produces 500,000 tons a year.

INSTALLATION: GM 4-71 Diesel replaced gasoline engine in 1¼-yd. dragline four years ago. Firm also repowered two shovels and a portable crusher with GM Diesels and powers a washing plant pump with a 4-71.

PERFORMANCE: With GM Diesel Power, the dragline loads one-third more per day while costing about half as much to operate. Operator says GM starts easier and permits faster swings with quicker recovery under load.

Repowered crusher produces 25% more and costs 25% less to run.

This Diesel Loads 33% More Gravel

at one-half the fuel cost

You are money ahead when your equipment does extra work each day. But profits really mount when you save on fuel and maintenance at the same time. The General Motors Diesel engine gets more work done in less time because of its faster, more responsive 2-cycle operation—power at every piston downstroke. This quick-starting, smooth-running Diesel fits in about the same space as industrial gasoline engines of comparable power—and provides fuel and maintenance savings of 40% to 70%. Ask your GM Diesel distributor to show you the savings this Diesel can make in your equipment.

DETROIT DIESEL ENGINE DIVISION
GENERAL MOTORS, DETROIT 28, MICHIGAN
SINGLE ENGINES...33 to 275 H.P. MULTIPLE UNITS...Up to 800 H.P.

It pays to Standardize on

Write for booklet "A 50,000,000 Horsepower Insurance Policy" that tells you why.

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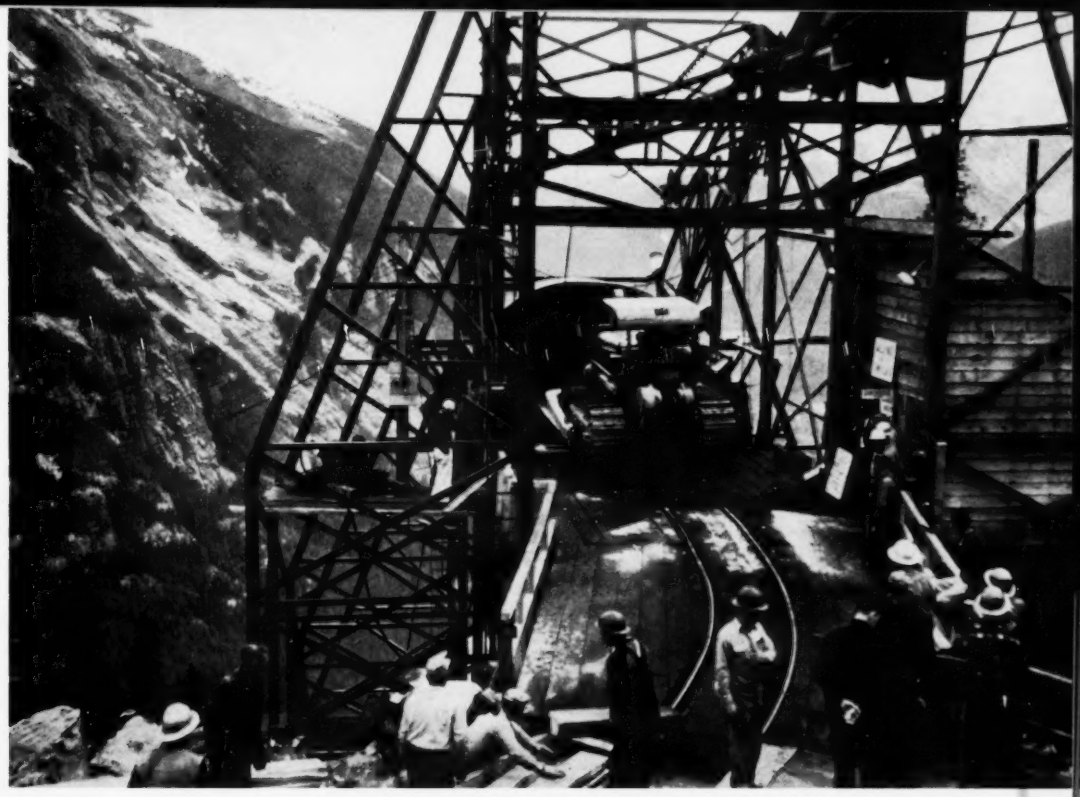


Above: To reach the tunnel heading being constructed a half mile above the valley floor, a giant aerial tramway has been installed. It carries a 9-ton car suspended from two cables and can lift 60 men or 20 tons of machinery at a trip. First load up was an International TD-24 tractor.

Below: Road-building under difficulties. A tractor winches itself into position for a downhill slash, building a switchback on the power line road.

Below right: Airlift by helicopter was maintained to supply a camp for tractor operators isolated by deep snows on top a mountain pass.

Whole Lake and River System Reversed to Furnish Power for Huge Aluminum Plant

» CONSTRUCTION of one of the world's largest aluminum production centers is well into its second year on the frontier far north up the Pacific Coast of British Columbia.

First stage construction, scheduled to be completed by the summer of 1954, is a start toward eventual investment of over a half billion dollars in the project by the Aluminum Company of Canada. The entire development is spread over an area the size of Connecticut 400 mi. northwest of Vancouver. It extends inland 175 mi. from the Pacific Ocean.

The immensity of the project is matched by the boldness of its engineers in altering the geography of the great Canadian wilderness. To obtain cheap power for the aluminum smelter, they are reversing the natural flow of an entire system of lakes and rivers from east to west. This is being accomplished by building a dam across the eastern outlet and forcing the impounded waters to rise to a man-made outlet 110 mi. to the west. Through a 10-mi.-long tunnel, the water is chuted from this long reservoir to a gigantic powerhouse. Power produced there will be carried 50 mi. by transmission lines over the mountains to the smelter site near the Pacific Coast.

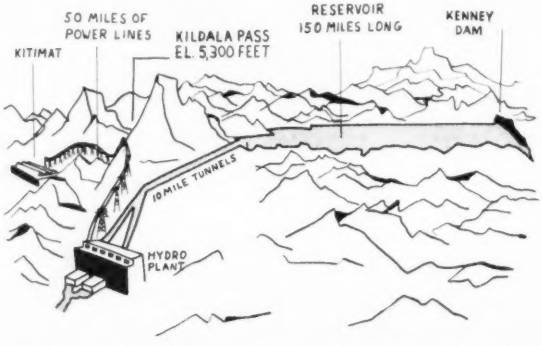
The dam, the tunnel, the power plant and the transmission line compose a system without which operation of the aluminum smelter plant itself would be impossible.

At the far eastern end, Kenney Dam, scheduled to be the largest sloping clay-core dam in the world, will be the first element in the scheme. Work be-

DAM—Kenney Dam, built to plug the waters of the Nechako River, is the far-eastern element of the project. Here, hydraulic monitors sluice down the rock fill after 31 Euclid trucks carry the rock from coyote holes blasted out half a mile away. Three blasts, each using up to 200 tons of dynamite (Canada's largest shot), provided this material. Morrison-Knudsen Co. of Canada has let a subcontract for construction of the dam to Mannix, Ltd. of Canada.

TUNNEL—100 mi. west of the dam, miners are driving a tunnel, 25 ft. in diameter, 10 mi. through the mountains from the reservoir to the powerhouse. The principal intake shown here will be 65 ft. below the surface of the new reservoir eventually.

TRANSMISSION LINES—A nearly completed section of the 50-mi. line to run from powerhouse in the mountains to aluminum smelter near the coast. Here, a bulldozer backfills around tower footings. Towers will carry cable conductor weighing over 2 lbs. per ft.



POWER PLANT—Excavating a huge cavern 1,500 ft. inside the mountain for the plant. Here, a tractor pushes blasted rock down a chute for loading out of tunnel. The solid rock wall will contain the pressure developed from a powerhead 16 times greater than Niagara Falls.

gan on the wilderness site last year after the contractors had hacked out a 60-mi. access road from the nearest rail head. Moving heavy equipment into the canyon and ferrying it across the Nechako River on a crude log raft were some of the early tasks faced. Workers now are employed in two 10-hour shifts a day, six days a week, on the dam which will be 317 ft. high and 1,550 ft. long.

The waters impounded behind Kenney Dam will back up through a series of lakes for 110 mi. to the west. A range of mountains there will be pierced by a 10-mi.-long tunnel, 25 ft. in diameter, to funnel the water to a large power plant.

The force of the fall in the tunnel—2,600 ft. in 10 mi., or 15 times the drop of Niagara falls—will turn eight turbine-driven generators which rank with the largest ever built. The power resulting will be equivalent to that used by the millions of people and thousands of heavy industries in Chicago.

The powerhouse itself, larger than a cathedral, will be sheltered deep within a mountain for protection from avalanches and heavy snow. Fifteen hundred feet inside Tahtsa Mountain, construction crews are excavating a cavern eight stories high and two city blocks long where the power plant will be installed.

The aluminum smelter site is 50 mi. distant over other mountains. To carry the power to it, Alcan is erecting a transmission line up Glacier Creek Canyon and over a 5,300-ft.-high pass. Deep snows and rugged terrain have made this phase of the project one of the most difficult.

At the west end of the 50-mi.-long transmission line, the smelter is being constructed in the delta of the Kitimat River at tidewater. There, on a 70-acre plot built out into the bay, an immense plant, half again as large as the world's largest, will be erected.

The British Columbia project has been called "the largest integrated engineering project in history." When completed, an uninhabited, mountainous wilderness, not completely mapped even, may become a great industrial center of North America, supporting a city of 50,000 people at Kitimat and opening up the whole under-developed heart of central British Columbia, an area as large as France.

In the clouds over Canadian mountains, a TD-24 makes its own work bench of waste material removed from tunnel. Weight of rock is forcing trees away from mountain side in sharp angle.

High up along Glacier Creek Canyon, two tractors are about to join two sections of power line access road as one works down to meet the other coming up. It took four bitter months of blizzards, high winds and snowslides to cut 4 mi. of road up this canyon wall. The impasse was broken when two tractors were taken over a bridge of packed snow by daring drivers to the top of the mile-high pass. It took the pioneer TD-24 a week to navigate the snow field. Snowbound on top the pass by snow that reached 150 ft. deep and spring runoffs, they set up a camp and were supplied by helicopter with all their needs.

All gravel for cement to line powerhouse cavern and make power line tower footings is taken from bed of Kemano River. Here, one of the 52 International TD-24's based at Kemano pulls another scraper load to stockpile. Kemano camp, nerve center for the vast project, employs 3,000 men.

MOVING lake-bottom gumbo over 1000′ hauls

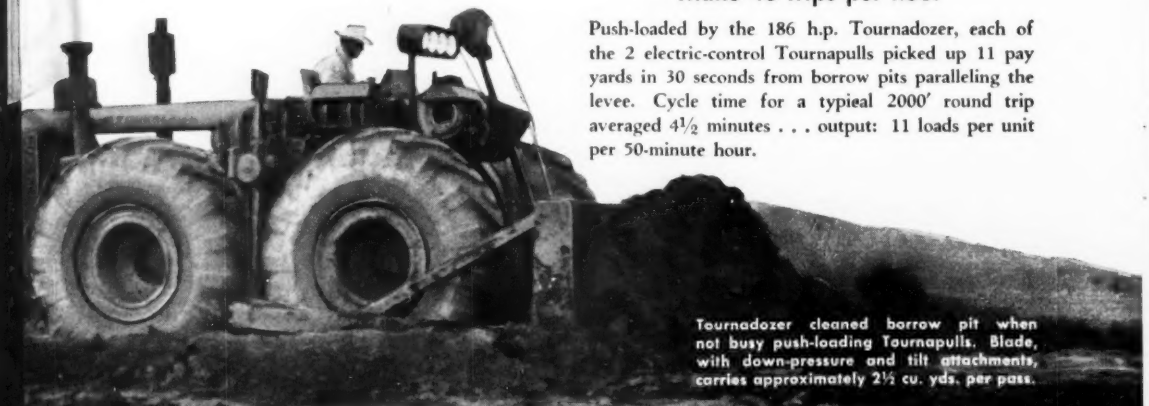
4 Tournapulls deliver 127,500 yds. in 280 hours

When Richter Bros. of Oroville, Calif., contracted to raise and widen Cousin Levee at Tulare Lake near Corcoran, they brought in their 2 electric-control C Tournapulls, 2 Super C Tournapulls, and a rubber-tired Tournadozer. The job was a tough one.

About 150,000 yards of lake-bottom gumbo had to be moved, much of it after heavy rains. Material was heavy, extremely sticky, and hard to handle. Haul distance included 40′ of 15% adverse grade up ramps onto top of levee.

Make 40 trips per hour

Push-loaded by the 186 h.p. Tournadozer, each of the 2 electric-control Tournapulls picked up 11 pay yards in 30 seconds from borrow pits paralleling the levee. Cycle time for a typical 2000′ round trip averaged 4½ minutes . . . output: 11 loads per unit per 50-minute hour.



Tournadozer cleaned borrow pit when not busy push-loading Tournapulls. Blade, with down-pressure and tilt attachments, carries approximately 2½ cu. yds. per pass.

FOR 23 YEARS, THE LEADER IN RUBBER-TIRED DIRTMOVING

Tournadozer, shown here loading an electric "C", serviced all 4 Tournapulls on hauls which averaged 1000 ft. The 4 'Pulls placed about 3550 pay yards of gumbo on the fill per 8-hour day . . . in the first 35 working days, moved 127,500 pay yards.

TOURNAPULL TIME STUDY

Haul	1000′ one-way, including 40′ of 15% adverse grade
Material	Heavy, wet gumbo
Loads	10 to 11 pay yards (with Tournadozer pusher)
Trips	11 per unit (per 50-min. hr.)
Pay yds. per hr.	110 to 121 per unit

MECHANICAL EFFICIENCY
95% over 1090 working hours

METHOD OF TRAVEL TO JOB
Over main highways under own power

Distance	From Oroville to Corcoran, 300 miles
Travel time	14 hours (21.4 m.p.h.)

New C Tournapulls now have capacity of 16 yards heaped, 2 yards more than machines described here.

The 2 Super C's, also push-loaded by the Tournadozer, averaged 1 minute longer over same cycle . . . moved 9 loads per unit per 50-minute hour.

"Work where other rigs can't"

This difference in output is due mainly to the new "C's" speed and greater tractive ability. "Electric power steer and torque-proportioning differential are the best features of these new rigs," says Partner William Richter, LeTourneau owner since 1935. "The differential enables these machines to walk through tough going where competitive machines cannot go."

You, too, can make C Tournapull's speed, electric controls, and all-weather production ability pay off on your job. See your LeTourneau Distributor and get all the facts on Tournapulls and Tournadozers.

Tournapull, Tournadozer Trademark Reg. U.S. Pat. Off. PD-189-A

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Peoria, Illinois

McKIERNAN-TERRY PILE HAMMER

proves its versatility

FOR MASSACHUSETTS CONTRACTOR

HERE are a few of the construction projects on which Daniel O'Connell's Sons, Inc., general contractors of Holyoke, Mass., have used a powerful, dependable McKiernan-Terry Double-Acting 9-B-3 Hammer.

FOR A BUILDING

Constructed close to the Holyoke canal system, the foundation for a new building required over 200 timber piles up to 30 ft long which were driven to capacity with the McKiernan-Terry Hammer.

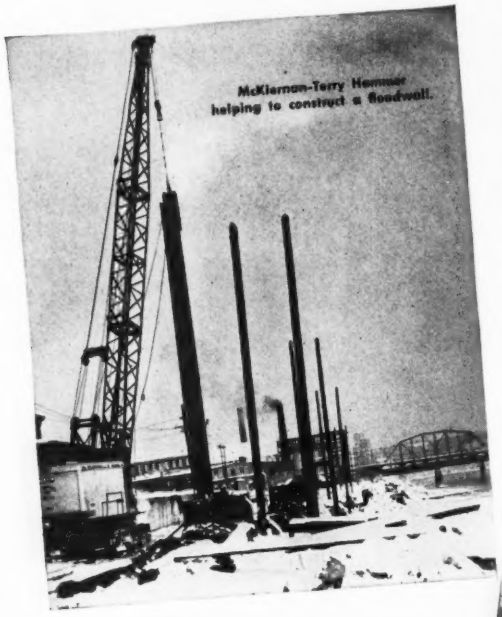
FOR A FLOOD WALL

The new Holyoke concrete flood walls and earth dikes required a steel sheet pile cut-off wall. The steel sheeting, up to 60 ft in length, was driven to refusal with the McKiernan-Terry 9-B-3 Hammer.

FOR A BRIDGE

A new South Hadley, Mass. highway bridge over Stony Brook has abutments which needed 110 steel bearing piles over 20 ft long. These were driven to ledge with the McKiernan-Terry Double-Acting 9-B-3 Hammer.

Contractors all over the world have proved the power, dependability and versatility of McKiernan-Terry equipment. Bulletin describes complete McKiernan-Terry line including 16 sizes of pile hammers and 2 sizes of pile extractors. Write for your copy today.



McKiernan-Terry Hammer helping to construct a floodwall.

McKiernan-Terry Hammer driving timber piles for foundation of a building.

Other McKiernan-Terry Products

MEAD-MORRISON COAL AND ORE UNLOADERS AND BRIDGES

Available in a variety of designs and in capacities of 300 to 1500 tons per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable and speedy operation.

GRAB BUCKETS

Range of types and sizes take bulk materials loads up to 25 tons. Ruggedness without excess weight.

HONING UP TO 42-IN. I.D. X 55-FT. LONG

Typical of the extensive facilities of McKiernan-Terry for unusual jobs.

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Plants: Harrison, N. J. and Dover, N. J.

MK 923

Hungry Horse Dam Finished

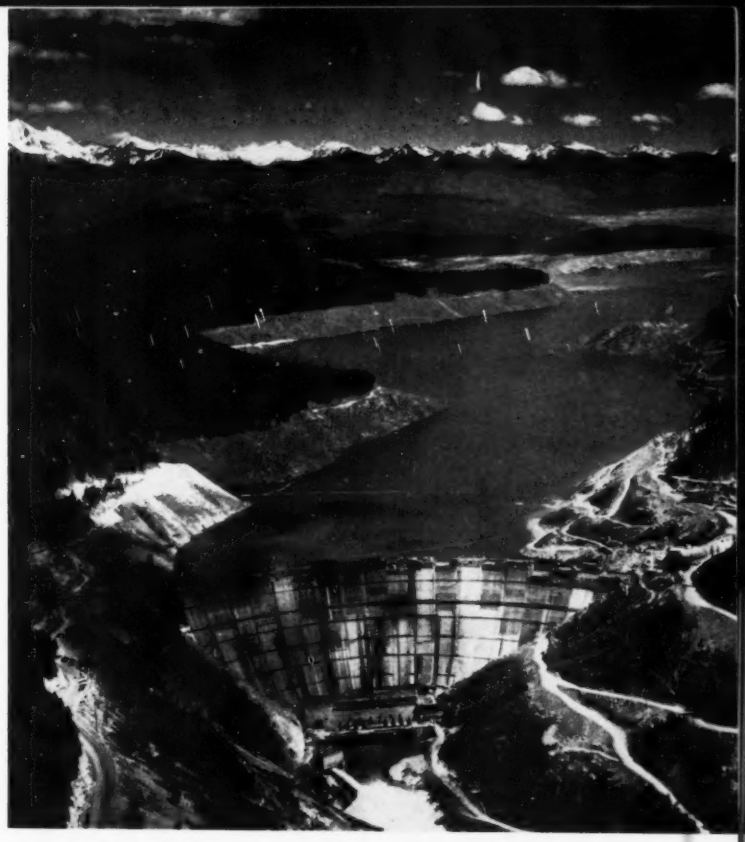
Four years of high-speed construction activity at the Bureau of Reclamation's big multi-purpose Hungry Horse Dam was climaxed last month when the last bucket of concrete was dumped in the 564-ft.-high dam.

The $102-million Montana project required about 3.1 million cu. yds. of concrete for its completion and, during construction, contractors set several placement records. According to the bureau, one of the highest records for sustained concrete placement ever reached on large dam construction was set at Hungry Horse last year when an average rate of over 206,000 cu. yds. per month was maintained for six months. Record placements of 235,600 cu. yds. in one month and 9,000 cu. yds. in one day were made from one mixing plant.

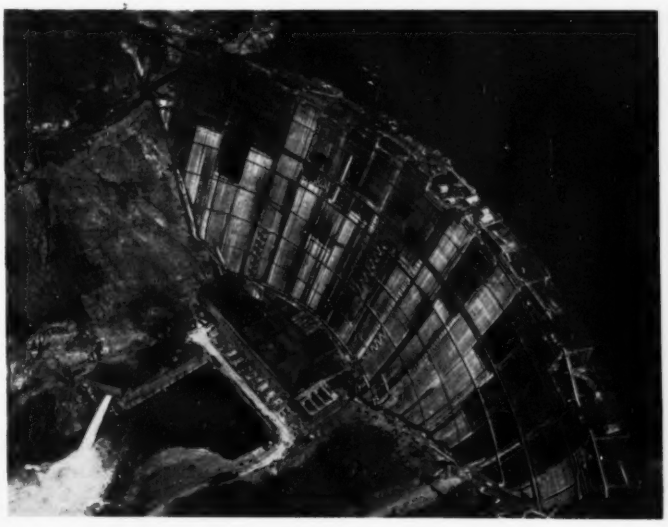
Completion of the dam a year ahead of original schedule was attributed to efficient organization both by the bureau and the contractors and the fact that many of the engineers on the job were veterans of other large dam projects. An experienced contractor team formed by the General Construction Co., A.G.C., Seattle; the Shea Co., A.G.C., Alhambra, Calif.; and Morrison-Knudsen, A.G.C., Boise, has been praised, with the bureau, for maintaining excellent working relationships, establishing a "conspicuously good" safety record, and making possible a saving of $5 million over original cost estimates.

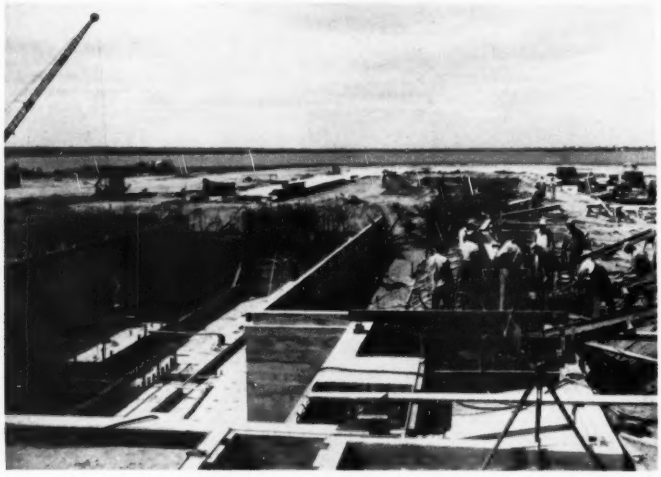
Several unique techniques were developed on the job as ingenious contractors pitted their minds against the natural obstacles encountered. Two firms responsible for clearing the 14,695-acre reservoir site came up with "the highball express," a 41½-ton iron ball which rode a cable stretched taut between two tractors and bowled down the timber. With five of the big spheres, they cleared up to 100 acres a day.

Another innovation was an optical plummet to project vertical survey control lines upward as the dam grew in height. By its employment, engineers were able to manage block layout for location of penstocks, elevator shafts and other features with finer accuracy. An estimated saving of $37,000 was effected on the job as the need for a field party to check findings by the old method was eliminated, the bureau reports.



Montana's newest lake rises beneath the snow-capped peaks of the Rockies behind Hungry Horse Dam. The Bureau of Reclamation structure impounds a reservoir which will be 34 mi. long and 3½ mi. wide when filled. The last concrete was poured last month after four years of high-speed construction and one year ahead of schedule. Contractors building the 564-ft.-high dam set one of the highest records for sustained concrete placement ever reached on large dam construction in 1951, with an average 206,000 cu. yds. per month over a six-month period.





One of the new and challenging construction projects undertaken to support military research. Here, workers pour concrete on the latest hydraulic catapult at Naval Air Test Center, Patuxent, Md. This underground, reinforced concrete structure, 80 by 120 ft. and 25 ft. deep, will be used to test take-off ability of new aircraft. The cost—$1 million.

Heavy Construction Notes

- The world's two largest steam-electric generating stations will be built on the Ohio River at Madison, Ind., at a cost of $320 million. The facilities will furnish power for the AEC's billion-dollar uranium diffusion plant near Portsmouth, Ohio. Transmission and other features are expected to raise cost of the two installations to $400 million.
- Virginia is planning a $81.5-million bond issue, part of which would pay for a $55-million bridge-tunnel across Hampton Roads.
- Bureau of Reclamation has let the first contract under a program of new starts to Guy H. James Construction Co., A.G.C., Oklahoma City, and Wunderlich Contracting Co., A.G.C., Omaha, for $12.8 million to build Tiber Dam and Reservoir in Montana.
- New York City officials expect to have $135 million in "new money" available for construction in 1953.

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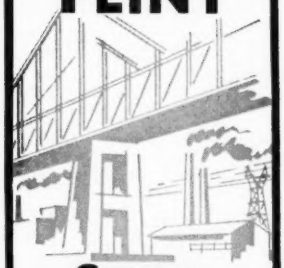

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Like Top Hats and Snowballs

they Go Together

All-Wheel Drive and All-Wheel Steer

Getting down to fundamentals, the main job for any self-propelled grader is to move a satisfactory amount of material with the blade, and keep traveling in the desired direction. To move a satisfactory amount of material requires adequate traction. To keep traveling in the desired direction means that a way must be found to overcome the side thrust of the load on the angled blade . . . if such control is lacking, one end of the grader or the other slides sideways.

Traction and *directional control* . . . these are the fundamental problems of the designer. They are completely solved in Austin-Western "88-H," "99-H" and Master "99" Power Graders by exclusive all-wheel drive and all-wheel steer. They can never be completely solved in an ordinary front steer, rear drive grader.

All-Wheel Drive and All-Wheel Steer work as a team, each making the other doubly effective. All-Wheel Drive provides 30 per cent more Power-at-the-Blade. All-Wheel Steer provides all-around maneuverability not approached by ordinary motor graders. This is why Austin-Western machines go places where others cannot go . . . do things other graders cannot do.

In the photograph above, an Austin-Western "88-H" is using both All-Wheel Steer and All-Wheel Drive to work smoothly and easily around a short radius curve, which a front steer, rear drive grader could not negotiate. Rear steer provides the required maneuverability . . . the live power in the front drivers completely nullifies the tendency—always present in ordinary motor graders—for the rear drivers to increase the turning radius by skidding the dead front end sideways.

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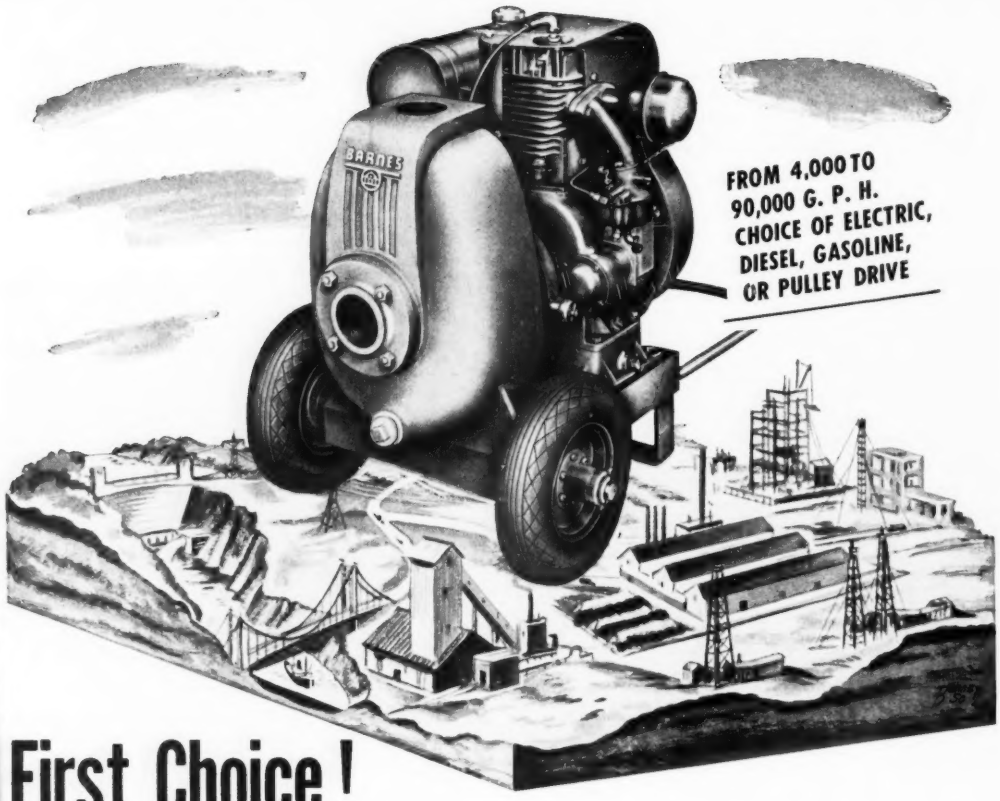
SINCE 1859—BUILDERS CONSTRUCTION EQUIPMENT



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It's the Barnes "33,000 for 1" Every Time

1ST IN PUMPING ECONOMY –

Barnes Automatic Centrifugals deliver not 1,000—not 10,000—but 33,000 gallons of water for each gallon of gas used. That's equal to 4⅛ railroad tank cars filled and overflowing. And that's pumping economy unmatched!

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Barnes Self-Priming Centrifugals will prime with pump body filled as low as ⅓ normal water level. Exclusive Barnes Peri-Prime feature gives surer, faster priming—with no loss in pump efficiency in recirculation!

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Barnes Centrifugals are really built! The heavy duty body and impeller defy wear! The Barnes Life-time Super Seal, with its case-hardened bearing surfaces assures trouble-free service for job after job — year after year!

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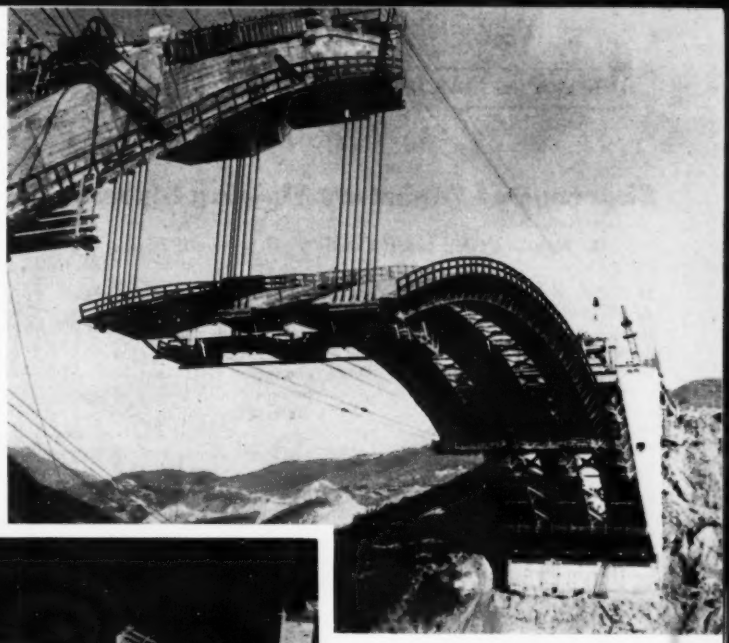
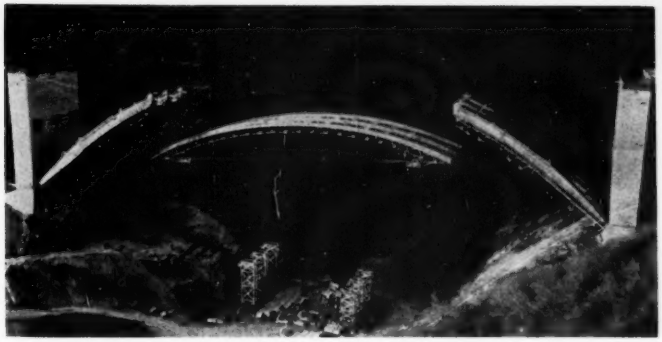
BUY THE BEST — BUY BARNES

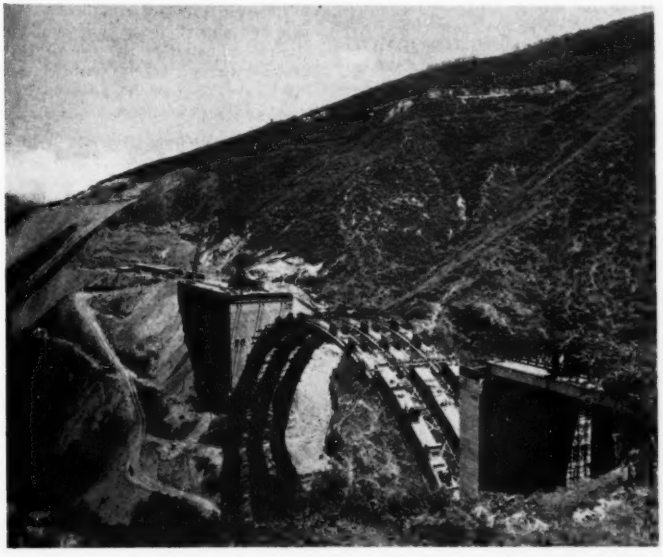
Bridging deep gorges on the $60-million Venezuelan highway are three of the world's largest prestressed concrete spans. The largest is 1,030 ft. long, 70 ft. wide and has an arched center span of 500 ft. Falsework for the 265-ft. center section of the span was put together on the valley floor and then raised 220 ft. to be joined to protruding sections. Photos right and below show that operation.

Deck slabs, main and cross girders were precast at the site in steel molds on vibrating tables. The hollow-girder type arches used only 2,400 cu. yds. of concrete per ft. run.





Below, falsework for the prestressed concrete span in position. It weighed 220 tons and was lifted by four 10-h.p. electric winches. After the eight beams and 112 slabs for one span are placed, they are tied together by prestressing cables.



Venezuela Gets World's Largest Prestressed Concrete Bridges

In Venezuela, this season, Campeon Bernard's construction firm of Paris fabricated and positioned three of the largest prestressed concrete bridges in the world after underbidding American contractors for the job.

The bridges, pictured here in various stages, are links in one of the world's most expensive highways—the "Autopista" which runs from the capital of Venezuela, Caracas, to the seaport town of La Guaira. The highway is being carved through foothills of the Andes at a cost of $6 million per mile. About 300 curves in the old route will be eliminated and driving time cut from one hour to 15 minutes over the 10-mi.-long road.

Morrison-Knudsen, A.G.C., Boise, is building two giant "twin" tunnels on the "Autopista" and Yankee-built equipment of a size seldom seen in Venezuela is being used.

The entire undertaking is being paid for in cash from Venezuela's fantastic oil and mineral resources. Fifty percent of the nation's imports will come over the road. Toll charges will pay for the bridge.

Mountain gaps 141 ft. deep are being filled to carry the new highway. More dynamite is being used here than on any road job in the history of South America.

Once the $60-million mountain highway is completed, Venezuela plans to extend it an additional 8 mi. through Caracas, the busy capital city.

Shortage of Engineers Slowing Highways

• Anti-Diversion Need Cited; Steel Slow but Easing Slated

» THE NATION'S highway construction program is being delayed by such major factors as the lack of enough engineers to plan and supervise work, inadequate financing, and slow steel deliveries, it was concluded by the joint cooperative committee of the American Association of State Highway Officials and the A.G.C. last month.

Meeting in conjunction with the convention of the Southeastern Association of State Highway Officials in New Orleans, the committee had attendance of key southeastern highway officials, top engineers of the Bureau of Public Roads and many highway contractors.

While substantial road construction now is being delayed by slow steel deliveries, the state highway officials were optimistic of a rapid improvement in the supply picture to the extent that they indicated intentions to award promptly and without hesitation those jobs requiring this metal.

Noting that the most severe single factor affecting the program is the engineer shortage, the state highway departments complained that in some instances they are unable to use promptly all funds now available for construction. The shortage extends into all salary grades and among the subprofessional workers.

Although there is a national shortage of all types of professional engineers, the low salary scales generally prevailing for highway engineering personnel were cited as the principal difficulty in the states. Committee members commended the efforts of the A.A.S.H.O., A.G.C. and the American Society of Civil Engineers aimed at bringing the matter to the attention of all highway interests and the general public.

Improved public relations programs, prompt use of funds available, and prevention of road fund diversion for non-highway purposes were cited as important steps to be taken to assist highway planning and construction.

In view of the continued widespread diversion of highway revenues, contractors and other interested groups were urged to increase their efforts to effect anti-diversion amendments to state constitutions. Such protection exists in only 21 states.

Now is the time, the committee was told, to launch such programs in view of the meeting of many state legislatures early next year and the election of many new state officials this fall.

Maintenance by contract was cited as a method of not only effecting needed economies, but also of reducing the highway department's manpower problem. Several states reported successful use of the method.

Other subjects discussed included working time allowed contractors, improved methods of handling traffic on construction jobs, subcontracting restrictions, and stage construction contracts.

Presiding at the meeting were C. S. Mullen, chief engineer of the Virginia Department of Highways, and N. K. Dickerson, Jr., of N. K. Dickerson Inc., Monroe, N. C.

CAA to Review Airport Construction Needs

• Sawyer Will Ask Congress for More Federal Matching Funds

» NEEDED airport construction got a boost last month from Secretary of Commerce Charles Sawyer when he asked the Civil Aeronautics Administration to review its federal-aid airport program as a basis for requesting more funds from Congress for such construction.

The secretary, who has just completed a tour of western and mid-western airfields, is convinced of the need for increased airport development, including construction of some new installations. He called the air transport industry "a vital part" of our expanding national economy and cited the inadequacy of present facilities for handling larger, heavier and faster planes.

"In the light of these facts, I have asked the Civil Aeronautics Administration to make a complete review of the criteria for our airport program," he announced. "We will probably ask for and use additional federal-aid airport funds to speed up construction of airports now underway, make improvements to existing facilities and construct some new airports."

Under the Federal Airport Act of 1946, the federal government matches funds put up by local governments for airport development. The CAA has been authorized to expend $520 million for that purpose over a 12-year period. Thus far, Congress has appropriated only $195 million of which the CAA has obligated $182.5 million. About 2,311 projects have been completed at 1,162 locations.

A CAA survey in September showed that approximately $157 million in federal funds would be needed to match an equal amount of local government-sponsor funds for airport construction or development throughout the country which could be justified on both civil and national defense basis.

The CAA survey showed that some $75 million has already been raised by local communities and is immediately available to be matched by federal funds. The agency found that claims on the balance of the $157 million federal funds would be made "very quickly" once they become available.

Highway Construction Notes

• Wisconsin legislators will be asked to appropriate $300,000 for a cost and traffic survey to determine feasibility of a proposed cross-state, four-lane toll superhighway. Preliminary studies indicate that the 287-mi. turnpike, running roughly parallel with Highway 12, could be financed by a $180-million bond issue.

• Utah's state road commission finds that the state's program of 79 urgently needed projects can be completed in five years for $71 million.

• Continuing to exceed expectations, toll collections on the Chesapeake Bay Bridge reached $329,534 in September, compared to $188,352 taken in by ferry boats for September last year before the bridge was completed.

• One year of operation of the proposed Illinois Road Test, soon to be undertaken by the American Association of State Highway Officials, is expected to cost $254,000 for maintenance, $269,000 for gas and oil for test vehicles, $272,000 for test personnel, and $85,000 for tires. Construction and right-of-way costs may exceed $1½ million.

THE JACKSON ASPHALT-GRANULAR SOIL COMPACTOR

NOW VASTLY MORE POWERFUL, FASTER

Quickly INTERCHANGEABLE BASES OF 12" TO 24" WIDTHS

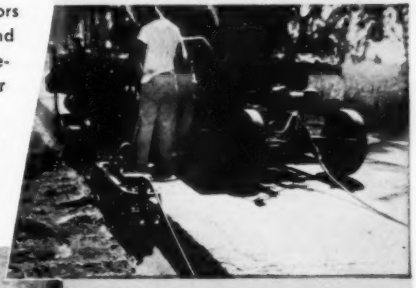
The new, heavy-duty, exceedingly powerful vibratory motor now incorporated in the JACKSON COMPACTOR has stepped up its walking speed and power greatly. It will compact granular soils at optimum moisture to specified density in depths of 8 to 12" at the rate of 2400 sq. ft. per hour.

For compacting granular soil in sub-bases of concrete floors, in bridge approaches, close to abutments, and for compacting blacktop mixtures in pavement widening and patching, paving drives, walks, railway platforms and crossings, this machine with its quickly interchangeable bases, is the most convenient, mobile and efficient time and money saver on the market. A tandem version utilizing two heavy-duty compactor motors mounted on bases of proper width is amazingly efficient and economical for compacting granular fill in trenches, in pavement widening operations, to provide a stabilized base for the blacktop widening strip.

Operated by a Jackson Power Plant mounted on auto trailer with means of quickly picking up and lowering the compactor. See it at your Jackson Distributor, who has it both for sale and for rent, or write for complete details.

▲ Tandem Compactor stabilizing granular sub-base for blacktop pavement widening strip.

Tandem Compactor easily keeps up with spreader and is controlled by spreader operator. No additional labor is required. ▼



JACKSON VIBRATORS, Inc.
LUDINGTON
MICHIGAN

Fill Dumped in 50 ft. of Mud

At the edge of the solid fill being extended across the bay, an International TD-24 Crawler tractor and 21-yard scraper dump another load of shale and clay. Although the water at mean tide is only about 10 ft. deep here, there is a 50-ft.-deep layer of mud on the bottom. The dark material on the right is mud being squeezed up to the surface as the fill settles.

The California Division of Highways is experimenting with a unique type of fill across San Francisco Bay, which, if successful, will enable contractors to build a freeway across the 2-mi.-wide inlet faster and cheaper than otherwise.

Although the bay water is only about 10 ft. deep between Visitation Point near Bayshore and Sierra Point, there is a soft mud bottom approximately 50 ft. deep. The engineers are not dredging this mud before placing the fill but are dumping the fill material over the mud and allowing it to settle. As the fill settles through the soft layer, it pushes the black slime out from underneath and comes to rest on a harder, compressed mud bed below which will support 10 tons per sq. ft.

The Keeble Construction Co., A.G.C., San Jose, Calif., has a $175,000 contract for extending the fill across the bay. The proposed freeway to be built on this base will allow traffic to avoid congested business areas.

Looking southward from Visitation Point, Bayshore, Calif., over the experimental fill being placed in the shallow waters of San Francisco Bay. It is 2 mi. across the bay here.

Peterson Urges Wise Design

» IMAGINATION and resourcefulness in designing highways were advocated last month by W. C. Peterson, chief of the construction branch, Bureau of Public Roads, in an address before the Southeastern Association of State Highway Officials at New Orleans.

The federal official found ineptness among designers particularly disheartening where the specifications were needlessly written for materials in short supply. "It is inevitable," he said, "that the contractor will occasionally meet material shortages.

"What should not be inevitable, however, is that all too often those shortages could have been avoided by a designer more alert to the local supply situation. To cite an example: In certain areas of the country tar has been used extensively in bituminous road construction for many years with good results. However, for the past few years the supply of tar has been diminishing while available asphalt supplies have increased until now the price differential is much in favor of asphalt. Yet the designers continue to specify tar, forcing the contractor to 'scrounge around' to find enough material and compelling the project to bear a premium cost. Other examples could be given, such as the blind specifying of slag bases, neglecting to consider other possible cheaper and more available local materials."

An understanding of the contractor's problems on the part of state engineers will make it possible for him to produce more roads for the money on hand, Mr. Peterson asserted.

"The highway designer is a monopolist," he told the state road officials. "The contractor must bid on the projects he produces; the traveling public must buy the roads he designs. As with all monopolies, there is danger of our becoming complacent. At times, from sheer inertia, we may fail to try something new. The problem we face in building and keeping up an adequate highway system is so great that we cannot afford any complacency. We must stay alert to every opportunity to reduce costs and extend our inadequate funds. Designing, with the proper regard to construction practices and difficulties, is one important way to do this."

He urged fair consideration of the contractor in specification writing.

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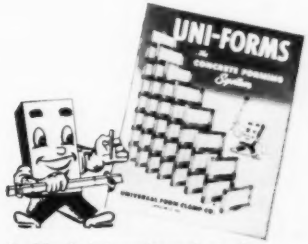

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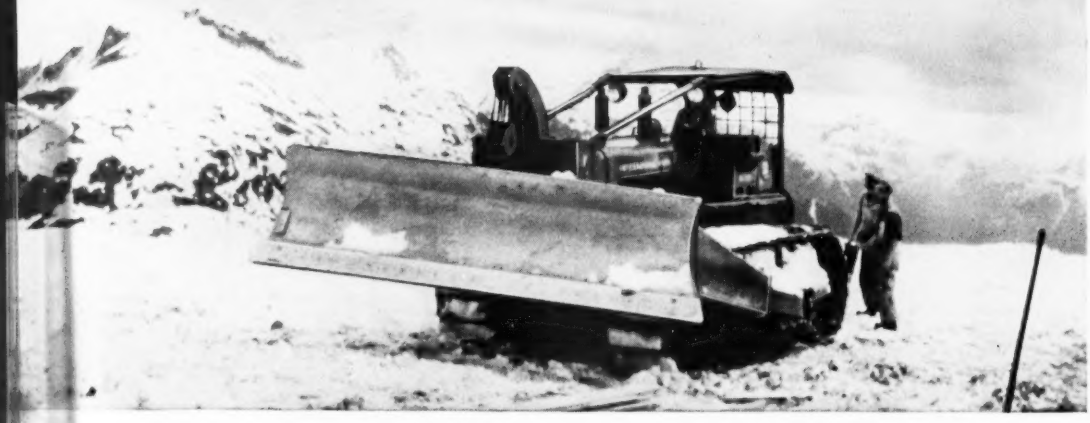
Big

ESTABLISHING MOUNTAIN-TOP BASE, a helicopter and a TD-24 put men, machinery and supplies on mile-high pass as first step in efforts to build road down to meet section coming up from each side. TD-24 pulled yarder, winch, and compressor into pass after bitter 7-day fight.



1 RAISING KENNEY DAM to fill the Grand Canyon of the Nechako River, workers sluice down some of the 3.8 million cubic yards of earth and rock it will eventually contain. Dam will form a reservoir with twice the capacity of Grand Coulee. TD-24 in foreground strips blasted rock from canyon wall abutment.

2 HEADING OPERATIONS at Kenney Dam are (left to right) Alcan Resident Engineer Harry Jomini; General Superintendent "Hak" Nielsen and Project Manager Jack Bremner, both of Mannix, Ltd., sub-contractor for Morrison-Knudsen Company of Canada, Ltd. 110 miles west, dammed-up waters will be diverted through mountains and dropped a half mile to run turbines in sea-level powerhouse.

3 DRIVING TEN-MILE TUNNEL through mountain is done from four headings. Here, half a mile above ocean-level valley, aerial tramway has delivered TD-24 to tunnel portal for working debris down mountain. 2,600 feet below, eight-story powerhouse inside mountain is being mucked out by a TD-24 and a TD-9.

Red TD-24 Pioneers New Frontier

59 International TD-24s spearhead largest integrated engineering program in history for Alcan (Aluminum Company of Canada, Ltd.) on Project British Columbia

A fleet of 59 hard-hitting International TD-24s is blazing a new frontier across 5,000 square miles of wilderness in British Columbia.

Twenty-four hours a day, they're on the go for Morrison-Knudsen Company of Canada, Ltd., prime contractor for most of the giant development that includes:

Building the largest sloping clay core dam in the world

Driving a subway-size tunnel ten miles through a mountain

Blasting out an eight-story powerhouse two blocks long inside solid rock

Erecting a transmission line fifty miles long over a jagged mountain range

Raising the world's largest aluminum smelter and a new port city at Kitimat where 50,000 people may eventually live and work.

A. O. Strandberg, project manager for Morrison-Knudsen, says:

"These TD-24s are doing the impossible. We never thought any tractor could go where these tractors are working now. They have the weight, they have the balance, and they have the power to get the job done."

And here's what superintendents on the firing line say:

Bill Richards: *"They're pushing boulders uphill we had to dynamite in the old days."*

Herb Wilkinson: *"I wouldn't believe where they'd go until I got them on my crew."*

John Hutton: *"They're doin' work up here they were never built for but they're doin' it just the same."*

Your International Industrial Distributor can give you the facts and figures on the TD-24. See him. You'll be a TD-24 man from then on in!

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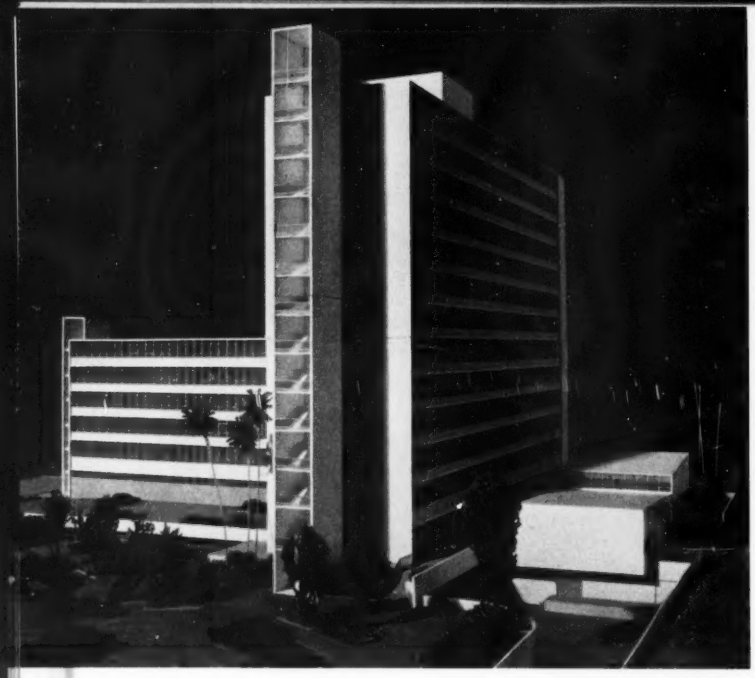
POWER THAT PAYS

4 **INSPECTING MOUNTAIN TOP OPERATIONS** at Kemano, headquarters for construction of powerhouse, tunnels and transmission line are (left to right) A. O. Strandberg, Project Manager for Morrison-Knudsen; F. T. Matthias, Alcan Assistant Project Manager, and Walter Abrahamson, Alcan Assistant Resident Engineer at Kemano.

5 **LINKING UP POWER TRANSMISSION LINE ROAD,** a pair of TD-24s doze toward each other through blasted rock. Across 50 miles of rugged terrain like this, a mountain-anchored powerline will be built to flash abundant electricity from mountain powerhouse to smelter at tidewater.

6 **NEW LAND IS MADE IN OCEAN INLET** by dredge which deepens anchorage for ocean shipping at the same time. H. M. Whiting (right), Project Manager for Kitimat Constructors, Ltd., and a superintendent study progress. Part of this 70 acres of new land will become site of new aluminum smelter. Town which may eventually become city of 50,000 will be built across the bay.



Mt. Sinai Hospital, soon to be built in Los Angeles, is indicative of the continuing boom in hospital construction which, last year, reached a record $914-million volume and is running at the same rate this year. Although Mt. Sinai Hospital will start out with 180-bed capacity, future construction will bring it to the size pictured here—650 beds in a 13-story structure.

1000th Hill-Burton Hospital Job Completed

- $10-Billion Need Keeps Hospital Boom Going

» LAST MONTH the 1,000th hospital project to be completed under the Hill-Burton program was formally opened.

The comparatively small project, a 49-bed hospital located in Lebanon, Oreg., cost $652,510—not a large amount, compared to the almost one and a half billion dollars which American communities and the federal government have teamed up and spent for new hospital facilities under the 1946 Hospital Survey and Construction Act. The $1½ billion expended during the last five years has paid for 525 completely new hospitals, 330 additions and 145 health centers.

Most of the projects, like the Lebanon hospital, are small—almost 60% are in communities of less than 5,000. General hospitals make up about 82% of the total.

At the 1,000 mark, the surge of hospital construction now underway under the Hill-Burton program does not appear to be slackening. The provisions for federal aid have stimulated planning and construction of another 800 projects. The agency estimates that $230 million worth of new projects will be put in place this year under the plan.

Even these hundreds of Hill-Burton projects do not represent the whole hospital construction picture. The $246 million expended last year under this program was only 27% of the total, when $914 million was spent for such construction by private organizations, local governments and the Veterans Administration.

These are figures that a few years ago were unthought of. Louis S. Reed, chief of the Medical Economics Branch, Public Health Service, wrote early this year that "even after adjustment is made for changes in the purchasing power of the dollar, hospital construction in 1951 stands at an all-time high."

"In terms of dollars of constant purchasing power, hospital construction in 1951 was more than three times the 1946 volume," he said.

This year, the Bureau of Labor Statistics finds hospital construction still proceeding apace. For the first nine months of 1952, the bureau reports, $664 million has been spent for new hospitals or additions.

According to the Public Health Service, the nation is still "substantially short" of the hospital facilities it needs. Although by the early part of this year, there were a million beds in use, about 874,000 more were still needed. It will take $10 billion worth of hospital construction to bring the nation's medical facilities up to par, it is estimated.

Two-thirds of the 874,000-bed deficit is in two types of hospitals—facilities for patients with chronic and mental illness. The greatest need (in comparison to existing facilities) is in hospitals for the chronically ill. About 258,000 beds are needed, authorities say, compared to the 40,000 now in use. The shift from construction of general hospitals to these types is expected soon.

Over half of the hospitals built under the Hill-Burton Act are in towns which have never had a hospital.

Typical of the 1,000 hospitals built with federal aid since 1946 is this 69-bed building, Gadsden County Hospital, just completed in Quincy, Fla., for $791,131.

Producers Promise to Give Builders New Product News

The Producers' Council, a national organization of manufacturers of building materials and equipment, will direct its major attention during the next year to giving factual information about the proper uses of new building materials to other branches of the construction industry, the council has reported.

Elliott C. Spratt, newly elected president, said in a recent release, "The aim of the program is to help reduce the cost and improve the quality of construction by showing architects, builders, contractors and distributors how to utilize most efficiently the host of varied products now on the market."

The Producers' Council plans to carry on its educational program through products displays, films, technical literature and informational meetings. Information offered by the membership will be channeled through the organization's 33 chapters. Details of the program will be developed by the council's joint committees with the Associated General Contractors of America, the American Institute of Architects, the National Association of Home Builders and other organizations.

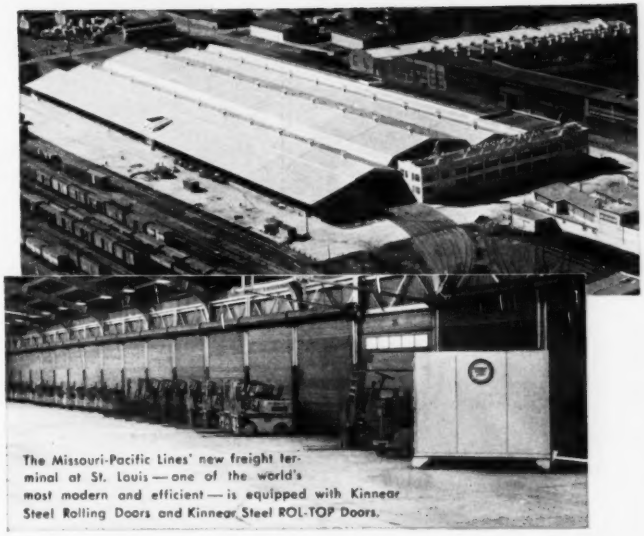
Building Construction Notes

• The Building Research Advisory Board will conduct a conference in Washington, D. C., Nov. 18-19, on housing and building in hot climates. Architects and builders attending will hear discussions on design, materials and mechanical problems encountered in those climates.

• New York City contractors are watching with interest the outcome of seven measures recently introduced in the City Council which would provide an integrated building code covering flat slab concrete work. Sponsors claim that lighter structural weight would cut costs and simplify electrical work, lathing and plastering.

• "SCR brick", recently developed by the Structural Clay Products Research Foundation, is now being manufactured by 52 companies across the U.S.

• The Parker Pen Co., Janesville, Wis., has nearly completed a $3.5 million plant where 5 million pens a year will be turned out.



The Missouri-Pacific Lines' new freight terminal at St. Louis — one of the world's most modern and efficient — is equipped with Kinnear Steel Rolling Doors and Kinnear Steel ROL-TOP Doors.

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prove their extra value for every need

The advantages of Kinnear Rolling Doors *for all types of buildings* are proved by their performance in big installations like this — where doors are the very life-line of efficiency.

The coiling upward action of Kinnear Rolling Doors makes all floor and wall space around doorways fully usable at all times. Freight or materials can be stacked close to the door curtain, *inside and outside the building*, without blocking door action.

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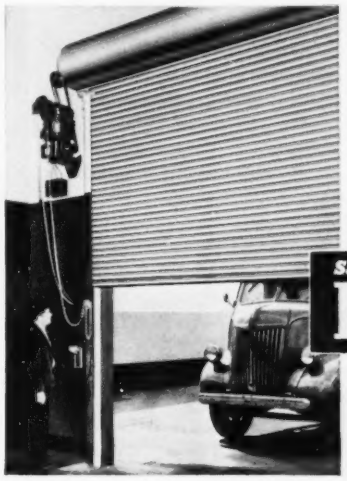

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LARGER ROLL CRUSHER

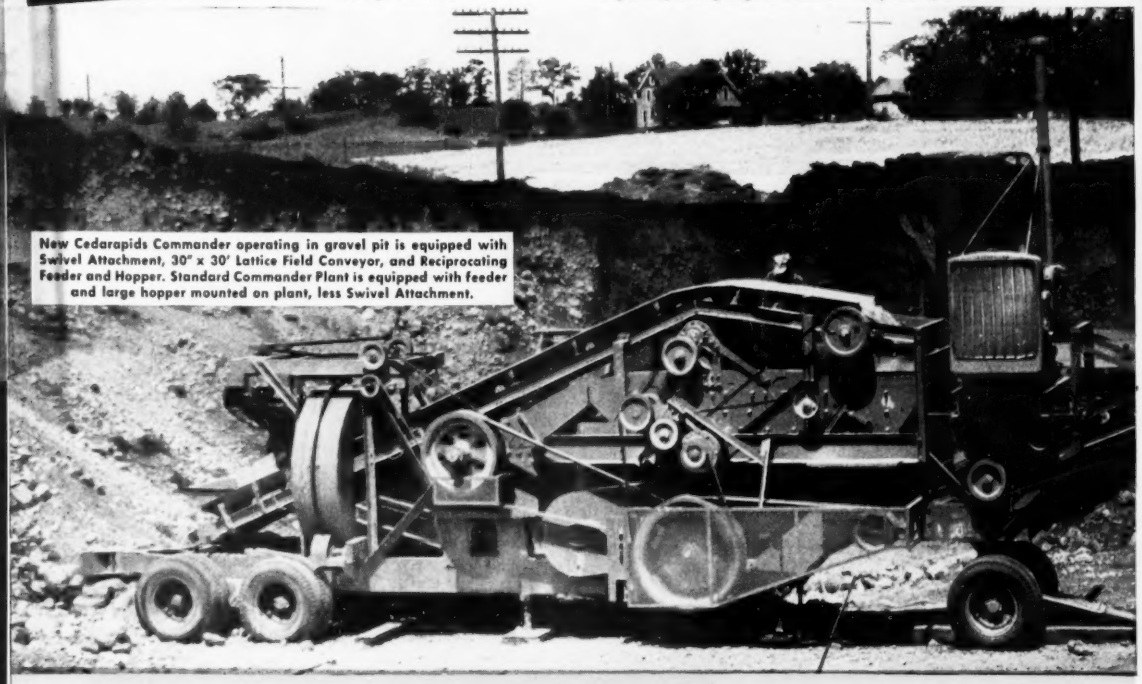
The 30"x22" Roll Crusher in the new Commander increases secondary crushing capacity by approximately 50% for the producer who needs greater output, or whose pit conditions put a bigger load on the secondary crusher. Heavy-duty construction features include: Smooth or corrugated manganese steel roll shells; Timken tapered roller bearings for maximum long wear and economical operation; Finger timing gears of chrome molybdenum and heavy chrome vanadium steel; Helical tension springs; Easy roll shell opening adjustment. Cedarapids patented safety shear plates prevent crusher damage from uncrushable foreign material.

LARGER SCREEN

The big 48" x 10' Screen on the Commander Plant gives you 30% more screening capacity! This, plus the more efficient screening action and the *extra* capacity of all Cedarapids Horizontal Vibrating Screens, assure big volume output of accurately graded aggregate. The top deck feeding principle used on Cedarapids Plants also increases capacity by eliminating any possible choke point. By making an immediate split of the pit material, the circulating load on crushers, belts and screens is reduced and the output of the plant is not limited by the capacity of the jaw crusher. Lower over-all head room required (traveling and operating height the same).

LARGER CONVEYORS

The feed conveyor, delivery conveyors and under-crusher conveyor on the Cedarapids Commander have been widened to 30" to handle the increased capacity of this plant. The channel frame conveyors combine light weight with exceptional strength. Pulley shafts are fitted with sealed anti-friction bearings. The idler ball bearings are sealed for life. These belt conveyors are ideal for Commander Plants because they are built for continuous, efficient service under the toughest working conditions. As optional equipment, an 18" x 18' sand conveyor and an 18" x 27' chip conveyor are available.



New Cedarapids Commander operating in gravel pit is equipped with Swivel Attachment, 30" x 30' Lattice Field Conveyor, and Reciprocating Feeder and Hopper. Standard Commander Plant is equipped with feeder and large hopper mounted on plant, less Swivel Attachment.

THE IOWA LINE *of Material Handling Equipment Includes:* ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS HAMMERMILLS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

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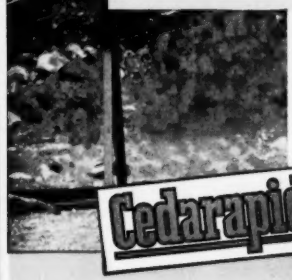
The Commander's big-volume output is combined with extreme portability and flexibility to handle a wide range of crushing and screening conditions . . . *and you get the same low maintenance and operating costs that are standard in the Junior Tandem!* It adds up to a pleasant profit picture in today's booming aggregate market. Find out about *all* the many new Commander features that help you command the market, the bidding, the pit conditions and the profit potential on every job. See your Cedarapids distributor today.

. . . and a host of other big-production features . . .

- **Swivel Feed Attachment (optional) to drive 30" x 30' lattice frame feed conveyor (as shown in picture).**
- **30" Reciprocating Feeder and Hopper, clutch controlled from operator's platform or ground, assure a steady, workable flow of material. A weight-loaded metering gate regulates the feeding for properly balanced plant operation.**
- **75" x 22" Elevating Wheel Return System makes the Commander shorter and narrower for easier transportation, and speeds handling of material from crushers to screen.**
- **Sand Ejector Screw, 12" diameter and 4' long, is used under the screen for discharging sand onto the sand conveyor. Optional equipment.**
- **The Commander is easily converted into a high capacity rock plant by using a Cedarapids 2236 AAA or 2540 AAAA Portable Primary ahead of it.**
- **Highly portable for easy moving from pit to pit. Fast set-up and take-down minimize lost time between jobs.**

It's another reason why so many contractors BUY CEDARAPIDS!



The development of new products to meet the constantly increasing demands for greater production of specification aggregate with no increase in operating and maintenance costs, is still another reason why more and more aggregate producers *Buy Cedarapids.*

Cedarapids equipment is produced in such a wide range of sizes and types, and designed for such a wide variety of work that selection of the proper machine for your specific job is no problem . . . and you are sure of getting equipment which is as modern and efficient as constant engineering research and precision methods of manufacture can make it. Iowa fully understands the needs of producers because Iowa Engineers keep in close contact with the problems of the field.

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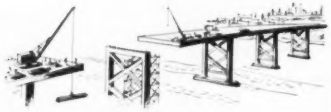

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B.R.A.B. Panel Advises Uniform Standards

- Hospital Group Calls Diversity in Plans "Conducive to Waste"

» UNIFORMITY of building standards and specifications, particularly among federal agencies letting contracts, was advocated by two advisory panels whose reports were part of the Building Research Advisory Board's study of conservation in building construction.

Both the panel on *Building Envelope and Interior* and the panel on *Hospital Space and Planning* saw the need for agreement on standards so that conservation recommendations would be made wisely. The latter group asked for research to eliminate diversity in specifications for Army, Navy and Air Force hospitals.

One "Right" Standard Sought

The panel pointed out that room sizes, ceiling heights, corridor widths and other specifications should be substantially the same in all hospitals. As one member of the panel has commented, "There is a great deal of confusion—too many different criteria. They can't all be right."

Such variations in existing space criteria for government hospitals, the panel reported, are "conducive to waste." To alleviate the irregularities, the panel strongly recommended a continuation of research to establish acceptable space standards.

The Hospital Space and Planning panel also took issue with the policy of the military to install service departments large enough to service hospitals twice the size. This planning for 100% expansion of bed capacity is unwise, the panel felt. It advised that the administrative, technical and domestic facilities of a military hospital be designed not over 35% larger than necessary to serve normal bed capacity.

Also advised was a review of contract procedures between the government and architects-engineers on hospital work "in order to achieve conditions more conducive to the exercise of design skill and ingenuity in the interest of long-term conservation." Members felt that architects should be allowed adequate time, fees and latitude in design.

The panel on building envelope and interior saw a need for all federal agencies to use generally accepted national standards and to adopt a uniform fire safety regulation.

That group, in its deliberations of conservation measures, offered a general criterion for designers:

"During an emergency all buildings should be designed to use the minimum of critical materials needed to satisfy the space arrangement, sanitation, essential comfort, safety, function, flexibility, and life probability required by the program, subject to any applicable building codes or other local ordinances. Otherwise, the designer should be left as much latitude as possible in the selection of materials and methods."

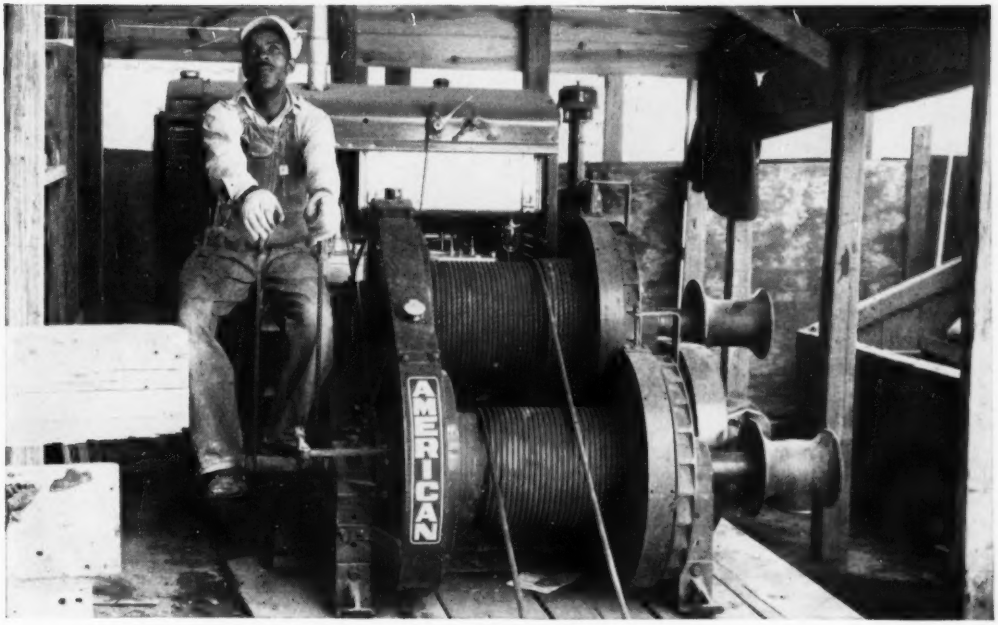
The group walked a thin line in its listing of representative building elements which might be eliminated for the sake of conservation. Not wishing to prejudice manufacturers of specific items, the panel agreed that only *emergency* conditions causing *extreme shortages* of metals could be the basis for eliminating them. For the same reason, the panel refused to suggest substitute or alternative materials and methods.

Conservation for Emergency Only

"The panel recognized difficulties in treating this subject without seeming to make implied recommendations for the use of substitute or alternate materials. It recognized the fallacies of any assumptions prejudicial to the use of specific manufactured products, or any class of manufactured products, the use of which in normal circumstances depends upon the merits of the product in a competitive market. The panel was also aware of the danger to a manufacturer's competitive position for normal markets when his product is prohibited during an emergency. Consequently, no recommendations of this panel are to be construed as favorable to or prohibitive of the use of any specific manufactured products or class of products, except when there is a completely adequate reason established by the nature of an emergency."

The panel came closest to specific recommendations in regard to substitutes for metal flashings on sloping roofs, parapets and gravel stops, and alternates for metal windows, doors and partitions. Even these recommendations are to be valid only during *extreme* emergency, the panel emphasized.

Business builder!



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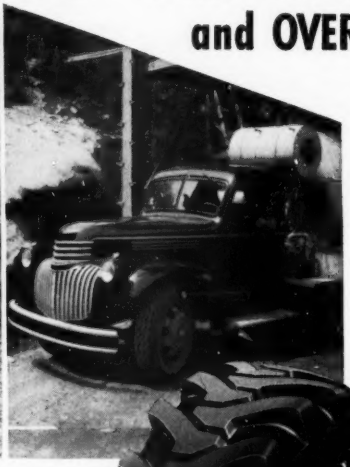

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SPECIFY GENERAL TIRES ON YOUR NEW EQUIPMENT

A.G.C.-N.E.C.A. Committee Is Established

• Step Taken Toward Better Relations with Electrical Contractors

» A NATIONAL joint committee to further more harmonious relations in the construction industry between general contractors and electrical contractors has been established by The Associated General Contractors of America and The National Electrical Contractors Association.

The action received its impetus in a motion adopted at the Mid-Year Meeting of the A.G.C. Governing and Advisory Boards authorizing the officers and Executive Committee to "initiate such cooperative action as they deem appropriate, directed toward establishing more harmonious relationships between specialty contractors and general contractors."

A.G.C. President Arthur S. Horner's invitation in September to N.E.C.A. to form the committee was accepted in October by N.E.C.A. President Don B. Clayton, Sr., of Birmingham, Ala., following approval of such action by the electrical association's Board of Governors. A conference was held in Washington in October by Mr. Horner and Mr. Clayton to discuss meetings of the committee.

E. J. Wheeler, Frank Messer & Sons, Inc., Cincinnati, has been appointed co-chairman for A.G.C. by Mr. Horner and C. S. Embrey, A.G.C. national staff, was named co-secretary.

N.E.C.A. Head Co-Chairman

Mr. Clayton will serve as co-chairman for his organization. The first meeting of the joint committee was scheduled for November 11 in Washington. N.E.C.A. has 3,200 member-firms organized into 105 chapters representing electrical contractors throughout the nation.

The N.E.C.A.-A.G.C. committee will provide a medium through which both organizations can cooperate to correct any questionable practices and work toward closer relationships between the electrical and general contractors.

Those who have been appointed to the committee from A.G.C. are: Hal S. Crain, Crain & Denbo, Inc., Durham, N. C.; Charles L. Harney, Charles L. Harney, Inc., San Francisco; Max C. Harrison, Harrison Construction Co., Pittsburgh, Pa.; Leo P. Richardson, W. E. Wood Co., Detroit; R. A. Smith, P. J. Walker Co., Los Angeles; H. C. Turner, Jr., Turner Construction Co., New York, N. Y.; Arthur H. Wells, John Griffiths & Son Construction Co., Chicago, and W. Murray Werner, The Werner Co., Shreveport, La.

Named to represent N.E.C.A. were: C. W. Moseley, R. H. Bouligny, Inc., Charlotte, N. C.; Wm. F. McCarter, Cates & Shepard, Philadelphia; Harold J. Hall, Hall Engineering Co., Detroit; H. J. Hill, H. J. Hill Electric Co., Wichita, Kan.; C. J. Langlois, Chas. J. Langlois Co., San Francisco; F. P. Coffey, Anderson-Coffey Co., Inc., Boston, and Paul M. Geary, of Washington, executive vice president of N.E.C.A.

Industry Cooperation Grows

The Associated General Contractors of America has now established national joint cooperative committees with 11 other associations or societies in the construction industry.

The purpose of these committees is to provide a means for the discussion of problems of mutual interest, and to bring together the industry's best thinking on measures leading to more efficient and economical construction.

Experiences of the committees has been that their discussions and recommendations to their respective bodies have been of benefit to the individual groups, to the entire industry, and to the public. The national committees serve as examples for a growing nummer of state or local committees. Groups with which A.G.C. maintains committees are:

American Institute of Architects
American Society of Civil Engineers
American Association of State Highway Officials
National Association of State Aviation Officials
Associated Equipment Distributors
Construction Industry Manufacturers Association
Producers Council
Surety Association of America
National Association of Mutual Casualty Companies
Association of Casualty and Surety Companies
National Electrical Contractors Association
American Public Works Association.

City Construction Problems To Be Studied

• A.G.C. and A.P.W.A. To Function Through Joint Committee

» THE Associated General Contractors of America and The American Public Works Association have appointed a joint committee to study matters of mutual interest in municipal construction, a step recommended at the A.G.C. Mid-Year Board Meeting.

The committee is expected to consider matters submitted to it by municipal and general contractors, public works officials and others. The invitation to set up the committee was extended by A.G.C. President Arthur S. Horner and accepted by Allan H. Rogers, president of A.P.W.A.

Co-chairmen of the committee appointed by the presidents of their respective associations are C. R. Ralph, Kaw Paving Co., Inc., Topeka, Kan., for A.G.C., and George R. Thompson, City Engineer, Detroit, for A.P.W.A.

Other members appointed by Mr. Horner are: Albert D. Blakeslee, C. W. Blakeslee & Sons, Inc., New Haven, Conn.; F. S. Oldt, F. S. Oldt Co., Dallas, Texas; Roy F. O'Mara, Allegheny Asphalt and Paving Co., Pittsburgh; V. B. Higgins, V. B. Higgins Co., Greensboro, N. C.; J. A. Thompson, J. A. Thompson and Son, Inglewood, Calif., and J. M. Sprouse, A.G.C. national staff, co-secretary.

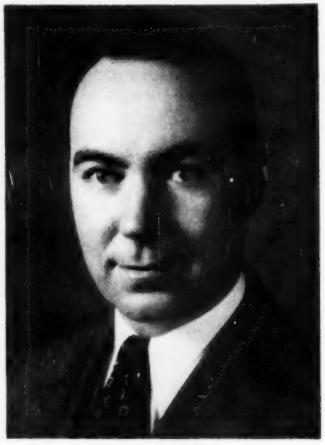
Serving on the committee for A.P.W.A. are: Warren A. Coolidge, Director of Public Works, Nashville, Tenn.; John S. Flockhart, City Engineer, Newark, N. J.; Roy W. McLeese, City Engineer, Salt Lake City, Utah; J. G. Rollins, Director of Public Works, Dallas; Merrill Butler, Deputy City Engineer, Los Angeles, and D. F. Herrick, Executive Director of A.P.W.A., Chicago, co-secretary.

Equipment situation was being studied this month by the Joint Cooperative Committees of the A.G.C. with the Construction Industry Manufacturers Association and the Associated Equipment Distributors at separate meetings in Chicago.

The Construction Fraternity and Contract Bonds

By Edward R. Higgins

Engineer, The Surety Association of America



Mr. Higgins

*(*EDITOR'S NOTE: *This article is based on Mr. Higgins' address at the recent Centennial of Engineering in Chicago, before the joint session of the Construction Division of the American Society of Civil Engineers and The Associated General Contractors of America.)*

» FROM THE STANDPOINT of history, suretyship, while exceedingly modern in its present applications, is perhaps the oldest type of business protection known to man. Solomon warned "he that is surety for a stranger shall smart for it" and "He is devoid of sense who becomes surety for another." There were no bonds on the pyramids, as far as we know, but maybe there should have been if Kipling was right when he wrote:

> "Who shall doubt 'the secret hid
> Under Cheops' pyramid'
> Was that the contractor did
> Cheops out of several millions?"

Many contracts in ancient Rome were bonded and one of them in 106 B.C. provided that "one half shall be paid down as soon as the bonds secured by the real estate shall have been executed, the other half upon completion and acceptance of the work." If modern engineers would be *that* generous I am sure that contractors would be hearty in their approbation and lavish in their praise of contract bonds. In England, the Magna Carta, that great milestone on the road to human freedom, was bonded and Shakespeare in the "Merchant of Venice" used the vicissitudes of those who become surety as the theme of one of his most absorbing dramas.

It was also in London, during the middle of the last century, that corporate suretyship was established in a place inauspiciously called the Tavern of the Devil and St. Dunstan. Since that time, corporate suretyship has survived its growing pains and taken its place among the important businesses of the country. And while not of American origin, it is really an American phenomenon, since its major growth and development as an industry have taken place in this country.

Today, surety companies undertake to make good the losses caused by persons who have obligated themselves to do certain things but have failed to meet their obligations by reason of error, fraud or fate. Their basic purpose is the elimination of financial risk. In the construction field, contract bonds make it possible for a contractor to provide the engineer and the owner with a responsible guarantee that he will satisfactorily complete the project at his price, and pay his bills notwithstanding the fact that a number of other contractors have disagreed with his judgment. A contract bond, then, is simply an I.O.U. with an "if" in it. In the simplest language it says "I (Mr. Surety) promise to pay you (Mr. Owner) up to the amount of this I.O.U., for any loss you may sustain if my friend (Mr. Contractor) should not perform his contract with you. If he performs, I owe you nothing."

Four "C's" of Credit

The most important types of bonds which are used on construction projects are the bid, performance and payment bonds. The bid bond guarantees that the bid is made in good faith, that the bidder will enter into a contract if his proposal is accepted and that he will also furnish performance and payment bonds. The performance bond usually covers whatever obligation the contractor assumes in his contract. The payment bond guarantees that the contractor will pay for labor and material. Sometimes the obligation to pay for labor and materials is included in the performance bond itself. This type of bond is called a combined performance and payment bond and such a form was used by the federal government until 1938. Due to certain difficulties under a single bond, such as priorities of the owner, the Miller Act was then enacted which provided for the superior dual system of separate performance and payment bonds which is in use today.

Obviously, before a contractor can obtain a bond he must be qualified. In determining a contractor's ability to swing a particular job, all underwriters apply the so-called three "C's" of credit, namely Character, Capacity and Capital.

Character means that the contractor "must consistently and persistently comply with the spirit as well as the letter of his contracts. He must have business experience and handle every transaction with fairness and honor." Character is the best collateral. Money cannot buy it. It is the keystone of the underwriting arch.

Capacity means that the contractor "must possess the necessary technical knowledge and practical experience as applied to his particular form or group of undertakings to enable him to carry them to completion in a workmanlike and economical manner."

Capital means that the contractor "must possess cash or credit to meet all his commitments, also the equipment and organization for the satisfactory performance and completion of his undertakings."

These excellent definitions, by the way, will not be found in any surety textbooks. They happen to have been chosen verbatim from a brochure entitled *Organization and Work of The Associated General Contractors of America*, only there they appear as definitions of Skill, Integrity and Responsibility. Such interdefinability is a perfect illustration of the natural affinity of the surety and construction industries and of their similarity of aim and purpose.

Of course, inherent in these three "C's" of credit is a fourth "C" which is becoming more important every day, namely the "C" of Changing Condi-

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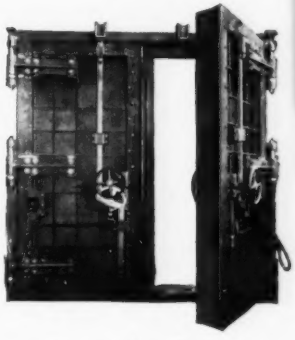

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tions. The economic, social, judicial and political developments of the times have a profound effect on such a basic industry as construction and no prediction of success for a project could be complete without a careful estimate of these increasingly fluctuating factors.

Separates Men from Boys

To put it in a nutshell, the essential elements of any *successful* construction project are Men, Money, Method and Material, the so-called four M's of construction. Strangely enough, however, these same elements are present in *unsuccessful* projects. The difference, of course, lies in the skill, integrity, and responsibility of the builder, and the four "C's" of underwriting separate the men from the boys by evaluating these qualities.

Complementing the underwriter and holding a position of importance is the contract bond agent. The agent is an advisor to both the contractor and the owner but he is more commonly called a producer, and he really does produce. Quite often, before the contractor even learns of the project, the producer is visualizing its potentialities and difficulties. After the contract is awarded, the producer continues to act in an advisory capacity and as a coordinator between the owner, the contractor, and the surety. He frequently finds sources of labor and expedites deliveries of material, aids in obtaining additional financing, assists in resolving the temperaments of individuals and groups and performs a host of other valuable services. To accomplish this, his contacts must be far flung and his talents manifold. Part contractor, part lawyer, part financier, and part detective, the producer must likewise be an able advocate, for without leading a contractor beyond his depth he must satisfy the underwriter of his client's ability to perform those contracts which represent a steady, healthy development of contractual capacity.

Since no underwriter or agent is a prophet, or a son of a prophet, however, and despite careful underwriting, it is a painful fact that losses do occur and a bond meets its ultimate test when a claim is made.

Early Days Were Chaotic

At one time, engineers looked upon a contract bond as simply an invitation to a lawsuit. Partly, they were right, for in the formative years of corporate suretyship there was little or no experience available, the competition ratewise was chaotic and many surety companies had to decline liability on technical grounds in order to remain solvent. Moreover, these were the days when contractors and sureties were really rugged individualists, devoid of the public and social responsibility which organizations such as the American Society of Civil Engineers, The Associated General Contractors of America, and other similar groups have instilled into the consciousness of the construction industry and its affiliated businesses.

Furthermore, the law at that time was mostly in the surety's favor. This was due to the personal origin of suretyship, because generally there was little or no consideration or premium for the personal promise of an individual to be surety and hence the courts strictly construed the obligation. With the growth of compensated surety companies, acquired experience, and improvements in rating techniques, the courts have liberally construed the surety bond and the companies bend every effort to make claim adjustments promptly, fairly, and in harmony with the highest aims of the leading associations within the construction industry.

The basic purpose of a bond, then, is the elimination of risk to the owner. In addition to providing this indemnity for loss, however, the evergrowing employment of contract bonds and the development of broader forms and new techniques have led to surprisingly valuable by-products of a bonded competitive system. Indeed, it is not untrue to say that *even if there were no defaults, bonds would more than pay their own way.*

Payment Bond Advantages

The most outstanding by-product of a bonded system is the *speedy, economic and preferential effect of the payment bond upon the flow of labor and material.* The payment bond has these effects because contractors are engaged in a business made more than normally hazardous by the vagaries of the elements, the physical problems of sub-surface conditions, and numerous other problems. Their subcontractors and suppliers, like all businessmen, must provide for business risks in the price they charge for their work or services.

If they are exposed to abnormal credit risks they have the choice of: 1) refraining from accepting the business—which benefits nobody; or 2) charging for the extra-risks—which results in a greater cost to the owner; or 3) seeking a guarantee of payment such as the payment bond, which will permit them to speed their credit investigations, eliminate their credit risk charge and make preferred deliveries to bonded rather than to unbonded work. It is a matter of public record that many large and responsible general contractors and subcontractors

At the joint session of the A.S.C.E. Construction Division and The Associated General Contractors of America during the Centennial of Engineering in Chicago: H. E. Foreman, Washington, A.G.C. managing director; A.S.C.E. President Carlton Proctor, and Arthur S. Horner, Denver, A.G.C. president.

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are favoring work on which payment bonds are required. On such work, these general contractors are securing better prices from a larger number of qualified subcontractors and this competition results in lower costs and better quality work for the owner.

Bid and Performance Bonds

Like the payment bond, the bid and performance bonds also have a cost-reducing effect, because the majority of contractors, including subcontractors and materialmen, must liquefy by bank loans needed assets which are tied up by "retainage," "short" estimates, and "security" deposits. However because of the hazards inherent in the construction industry, its average members have never been considered as preferred risks in banking circles.

This conservatism exists because despite the hazards of the construction business, its profits are generally much less than is popularly supposed and because hard-earned, slowly accumulated working capital, if once destroyed by the unexpected, is extremely difficult to recreate in these times of crushing taxes on profits.

The use of bid and performance bonds defrosts a contractor's otherwise frozen working capital by reducing to a minimum the need for such collateral security to the owner and removes an unnecessary limit on the capacity of contractors by permitting them access to the cash with which to meet payrolls and purchase materials on the favorable terms which contribute to lower costs and reduced bid prices.

Moreover, the services of contract bond agents have a cost-reducing effect. Agents have saved owners literally millions of dollars by interesting responsible contractors in jobs on which they had no intention of bidding, and in many cases, of which they had never even heard.

Loss Prevention Function

Another important although unheralded by-product of suretyship is the *loss prevention* activities of surety companies. Like fire and casualty insurance, which not only pay for losses to the owner but in addition provide services which prevent such losses, so also, contract bonds have a preventive as well as a curative effect. Surety companies realize as keenly as anyone that contract defaults under certain conditions are hardly compensable and that the public interest is better served by faithful performance than by indemnification for loss. Moreover, from their own bitter experience the companies have learned that it pays to run toward trouble, instead of waiting to be overtaken by it for they minimize their losses by taking prompt action. At one time there was more concern with the legal situation of a pending default than with improving the construction techniques. Fortunately this situation has been reversed and it is now common to engage highly specialized engineers when a contractor meets trouble and the advice of such men has often averted substantial loss and delay to all the contracting parties.

In addition to the cost-reducing and loss preventing by-products of a bonded competitive system, there is the accumulated "*know-how*" of decades of underwriting. There are certain businesses, just as there are certain individuals, whose job in life is to sit by the side of the road, so to speak, and be a friend to man. Under such circumstances, their scale of observation becomes broader than other men's and their knowledge and guidance of more than ordinary value. Suretyship is such a business.

Helped Create Joint Venture

It is suretyship, for instance, which instigated and made possible the joint venture as we know it today. This American way of getting things done by cooperation came into its own some years ago, when contractors and engineers were approaching what was probably the greatest single construction project undertaken in the history of our country—Hoover Dam. As originally contemplated, seven years were to be required for the completion of the dam and the contractors were in effect guaranteeing that their estimate of price would stand against all the "Changing Conditions" of that period. A bond larger than any that had ever been previously written was furnished on this project to back the contractors combined in a group known as the Six Companies, Inc. As one of the members of that outstanding group recently stated:

> "Success of that monumental undertaking established a permanent strong relationship between bonding companies and western contractors that endures today as a progressive, yet stabilizing factor, insuring the contractor's responsibility to the public and minimizing unsound and unprofitable practices."

Since that time, the joint venture has become commonplace. The surety business believes it to be a good practice. We are proud of the part that surety "know-how" played in the inauguration of an era of huge construction projects and we hope such projects will continue.

Promotes Risk Parity

The final and perhaps most important by-product of contract bonds has been the *stabilization of construction*, for construction is a great basic industry and its continuing success is vital to our national welfare and economic stability. One of the major objectives of The Associated General Contractors of America is called "Risk Parity" which is defined as "to place the business risks assumed by general contractors as nearly as possible on a parity with the risks assumed by other production industries." The reason for this lack of risk parity, of course, is that most production industries sell a standard product by adding a profit after costs are known, while in construction you agree to deliver a non-standard product at some time in the future at a price fixed before construction is commenced. In short, contractors deal in futures, and any market analyst will tell you the hazards inherent in that practice.

One of the major ways in which contract bonds promote risk parity is by the elimination of the unqualified. Indeed, were it not for the necessity of qualifying for a bond on public works, the probable chaos which would result in the contracting industry from irresponsible bidders simply beggars description. We admit of course that unqualified contractors occasionally obtain bonds. Mistakes we have made and mistakes we will make, since underwriting, like estimating, relies on judgment factors and there never will be a time when contractors, engineers or underwriters will be infallible. Actually, in view of the magnitude and complexity of the construction industry, the miracle is that more do not occur.

In other words, there is a *balance of power* in the construction industry which is similar to that of our own federal government. Engineers, like Congress, draw the plans; contractors, like the President, execute them; and sureties, like the Courts, see that both protect their rights and perform their duties.

To be stable, however, is one thing; to be static is another. The construction industry has traditionally been

(Continued on page 71)

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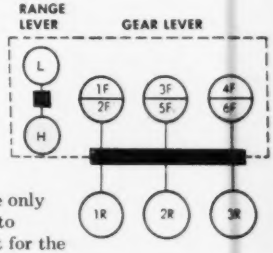

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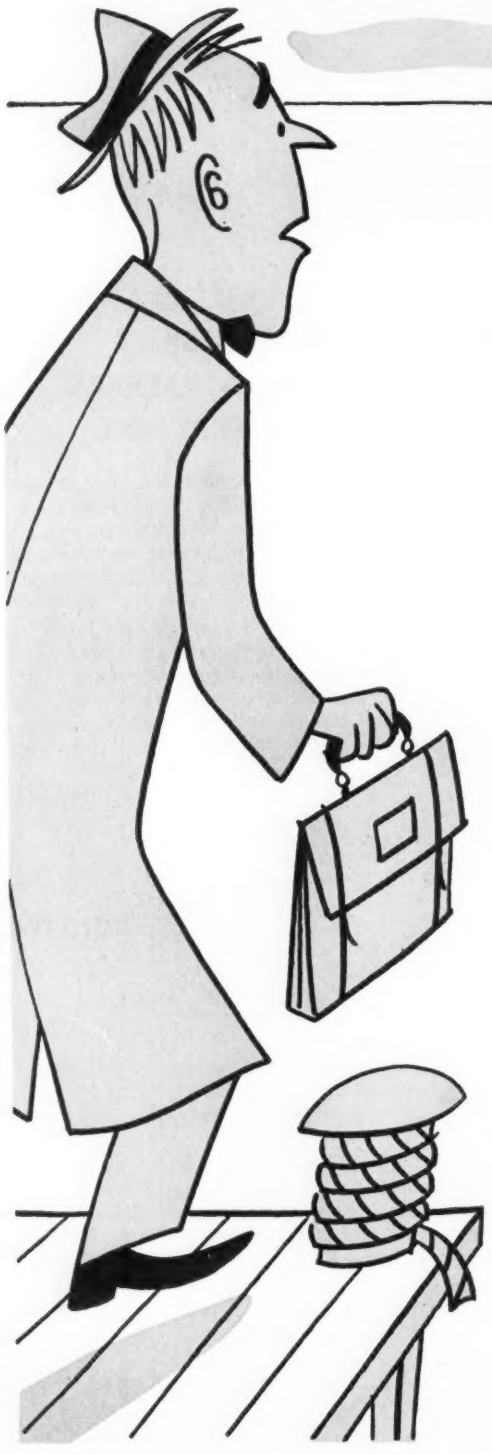

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one of intense competition and no good contractor would want it otherwise. To support this competitive system, it is sometimes necessary to bond contractors on jobs, the magnitude of which they have approached but not equalled. This is necessary because if the economies inherent in construction by contract are to be achieved, new contractors must be found to replace those who leave the industry, and provision must be made for qualified contractors to develop and step up their capacity. In this sense, bonds operate similarly to the A.G.C. apprentice-training program. As one of the largest and most responsible contractors in America stated recently:

> "Though once a poor and struggling concern, we have always been meticulously careful to keep our financial house in order and our cards on the table. In early times we were favored with bank credit and surety bonds when we had little to show for it except ambition, muscle and honesty. The surety firm that bonded us then still bonds us today, when our millions in bonds must be 'joint-ventured' through this firm to many others. We value highly the great free-enterprising financial institutions that are essential vertebrae in the backbone of American business."

How to Utilize Bonds

We have seen thus far that the basic purpose of bonds is to indemnify against loss, but that their corollary effects of cost reduction, loss prevention, stabilization and know-how are of equal value and importance. Now let us examine how contract bonds affect you as contractors and engineers and how you can best utilize their services.

First, let me suggest that you *familiarize* yourself with the subject of contract bonds and their underwriting requirements. The Surety Association of America and its individual member companies will be pleased to supply you with informative material on this subject.

Secondly, let me suggest that you *put suretyship to work for you.*

Contractors should keep up-to-date C.P.A.-verified financial statements on file with their agent and company. This greatly facilitates the handling of bonds.

Advise your agent as soon as you start to figure a job. It frequently takes some time to pass upon a contractor's qualifications.

Select your company and agent on the same basis on which they select you. On their Character as evidenced by their public reputation; on their Capacity for prompt and experienced service; on their Capital as evidenced by their ability as well as willingness to bond you on large contracts as well as small, and under all the Changing Conditions of our economic booms and busts. Companies so qualified, like contractors so qualified, are not found in bargain basements. Having thus chosen your company and agent, stay with them because the combination of qualified contractor backed by a dependable surety makes a team that can bid and perform under the most extraordinary conditions.

Discuss your situation periodically with your agent and company. Take them into your confidence and welcome their advice. Writing a bond for a contractor is somewhat like getting married; you never know what your partner is really like until the honeymoon of the contract award is followed by the trials of performance. Leading engineers, architects, and public officials have honored the fiduciary nature of this relationship between contractor and surety by not attempting to designate an agent or company other than the one with whom the contractor does business.

Lastly, don't be too ambitious. The great failing of some contractors is their excessive optimism. They think that large volume is the panacea for all their ills, whereas overextension, followed by rising costs or other unforeseen conditions, has been one of the principal causes of contractor failures. If, then, your agent or company suggests restraint, it's because they have your interest at heart, and you should be reminded of the father who advised his son saying "If you are too poor this year, my boy, perhaps it's because your credit was too good last year."

Suggestions for Engineers

Engineers can likewise put bonds to work for them. If you are in an *awarding or consulting capacity,* it is through you that the owner deals with the contractor and he relies heavily upon your judgment. As his representative you specify quality workmanship and high grade materials. Surely, the owner is entitled to the same grade of financial protection. If you use factors of safety in your design to withstand stresses above the

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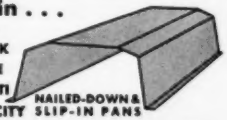
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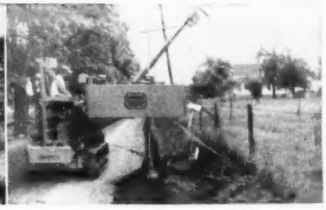

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assumed loadings, certainly you would be wise to prevent an unnecessary financial strain on the owner by recommending that a bond be required. As a sage engineer stated recently, "No longer is an engineering operation pronounced a success if the patient dies from bankruptcy or some other non-engineering ailment."

If your work entails the *preparation of plans and specifications,* strive to make them complete, clear, definite, legal and fair. Wherever appropriate, use the contract documents which have been prepared through the combined efforts of the American Society of Civil Engineers, The Associated General Contractors of America, American Institute of Architects and other similar groups. Give bidders time to prepare their estimates.

If your work entails *supervision of construction,* continue to assist the sureties in their loss-prevention activities by filling out the status inquiries which they send you. Pay estimates promptly. Continue to be practical and realistic in requiring conformance with the plans and specifications.

If you *teach young engineers,* inform them of suretyship; not only because their professional training is incomplete without such knowledge, but because a study of bonds will encourage them to broaden their sights beyond a sometimes narrow specialty into the broader fields of economics, history, finance, management, politics and people.

Gentlemen, nobody appreciates more than the surety business that this great country has been built by a host of honest and capable citizens known as contractors and engineers. You stand among our nation's richest assets, for *you* have done the work, *you* have taken the risks, and *you* deserve the credit. The sureties claim only the small but vital role of a construction catalyst which has accelerated the amazing growth and sparked the smooth teamwork that have made American construction, and America, the envy of the world.

It is almost prophetic that the initial letters of this granddaddy of the engineering societies, the A.S.C.E., should also indicate four major partners in the all-American joint venture known as the construction fraternity: A—for Architect, S—for Surety, C—for Contractor, and E—for Engineer. We are, in truth, a fraternity, for your success is our success and our aim like your aim is completion by faithful performance.

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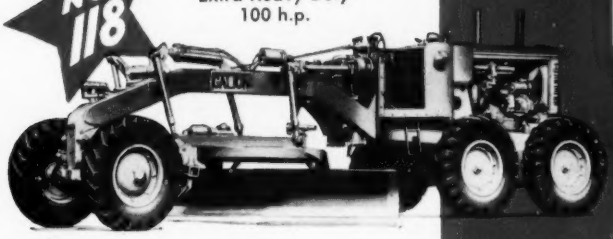

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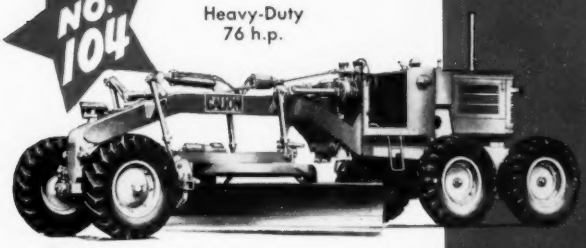

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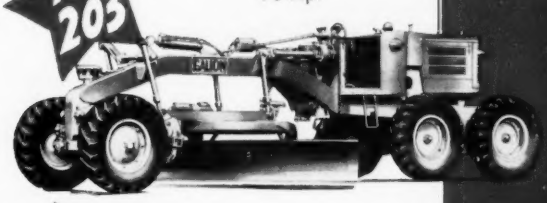

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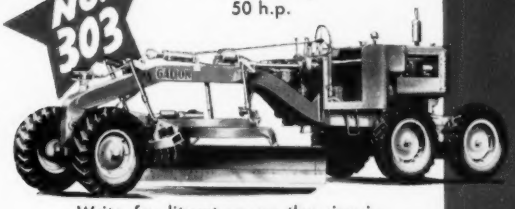

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Marquette Cements

A. G. C. Receives Safety Award At National Safety Congress

- Association Recognized for General Excellence
- Reduction of Occupational Injuries Is Noted

» A NEW AWARD of the National Safety Council for "exceptional service to safety" was presented to A.G.C. at the Council's 40th National Safety Congress and Exposition in Chicago Oct. 22.

The new award will be issued annually. It gives recognition to trade associations for the general excellence of their safety programs and for their contribution to the reduction of occupational injuries in their industries. It was presented by Ned H. Dearborn, president of the council, and accepted on behalf of A.G.C. and its chapters by H. B. Alexander, H. B. Alexander & Son., Inc., of Harrisburg, Pa., chairman of the Accident Prevention Committee of A.G.C. Harry J. Kirk, of the national staff, is manager of the Department of Research and Safety.

Five other member trade associations of the Council also received identical awards. They were the American Hospital Association, American Meat Institute, Folding Paper Box Association of America, Portland Cement Association and United States Brewers Foundation.

10-Year Comparison

In making the awards, the Council's Technical Committee and Committee of Judges considered accident prevention activities such as publicity, safety conferences, contests and publication of technical material.

In appraising A.G.C. activities to promote safety in the construction industry, a comparison of the years 1941 and 1951 were made. In that period the number of member-firms of the A.G.C. submitting reports on construction accidents, an important step in the over-all effort to reduce accidents, increased 655%.

The figures for the association, which has more than 6,100 member-firms in this country and Alaska who annually perform the majority of contract construction work in the United States as well as a large volume of work overseas, showed a greater number of smaller operators reporting, the average annual payroll hours per firm being 67% less in 1951 than in 1941.

The average number of lost-time accidents per million hours worked in 1951 was 75% of the 1941 rate. The average number of days lost due to accidents for each 1,000 hours worked declined 35% in 1951 over 1941.

The reduction in insurance rates for the various job classifications in the construction industry in spite of increased benefits was considered significant and represents a big over-all saving in construction operations for the ten-year period.

The A.G.C. was commended for the publication of its revised *Manual of Accident Prevention in Construction*, which received approval of the American Standards Association in January 1952, and was issued in a series of pocket size reprints, and for its integrated safety organization.

The Committee of Judges noted also that THE CONSTRUCTOR, which received the National Safety Council's 1950 "Public Interest Award for Exceptional Service to Safety," devoted even more space to safety articles in 1951 than in 1950. Many of the 121 chapters of the association feature accident prevention in their own publications and it is also an important part of the national public relations program.

Among other accident prevention activities of the A.G.C. were listed:

1—Organization of a liaison committee with Associations of Casualty Insurers as an aid in promoting safety from many angles.

2—Close cooperation with the National Safety Council. Mr. Kirk served as general chairman of the Council's Construction Section in 1951. Of the 52 members of the Executive Committee of the section, 24 are A.G.C. staff members or from A.G.C. member-firms.

3—An intensive program of safety talks before national and local groups.

H. B. Alexander, (right) chairman of the Accident Prevention Committee, receives the new award from Ned H. Dearborn, president of the National Safety Council, on behalf of A.G.C. and its chapters.

First Dallas Safety School Successful

- Called Step Toward Saving Lives and Money in Construction

» DALLAS CONSTRUCTION industry officials, who recently conducted a 4-week safety school, termed the venture "an outstanding success" judging from attendance and the enthusiasm displayed by those participating.

Meeting every Wednesday from 8 p.m. to 10 p.m. on Sept. 10, 17, 24, and Oct. 1, the total attendance was 879 for a nightly average of 219. The school was sponsored by the Dallas County Construction Employers' Association, Dallas A.G.C. Chapter and the Dallas Building Trades Council.

Those attending were unanimous in praising the school for the promise it gives in money saved and the elimination of human suffering caused by the maiming and death of valuable, highly skilled workmen. They also praised the Texas Employers' Group of Insurance Carriers who provided the air conditioned meeting place, refreshments between classes, plus full cooperation to sponsoring groups.

"Outstanding Contribution"

Harry J. Kirk, director of safety and research on the National A.G.C. staff, flew to Dallas to attend the school on Sept. 24. Mr. Kirk praised the groups' effort as "an outstanding contribution to the cause of industry safety."

Edmund G. (Pete) Peterson, of the Dallas Chapter was general chairman of the entire project and Julian Capers, Jr., managing director of the chapter served as general secretary to the committees which planned and activated the school.

The insurance carriers group also made tape recordings of the entire proceedings and will make them available to any chapters that might be interested in developing similar projects in their areas.

To stimulate attendance, certificates were given to members attending all four classes. Several contractors gave department store gift certificates to their employees who completed all of the courses.

Fla. Accident Prevention Class Largest

- Survey Shows Lost-Time Reduced 25% to 44% in Some Firms

» FLORIDA'S LARGEST class in accident prevention for the construction industry was held in Tampa recently and attended by 46 superintendents and foremen.

A. P. McIntosh, Tallahassee, safety consultant for the Florida Industrial Commission, said that "This is the largest class in the construction industry that we have taught in Florida since the commission started giving the 10-hour short courses three years ago. The attendance and interest shown here are very encouraging to us and Tampa members of the industry have every reason to be proud of its foremen and superintendents who have taken time out to attend these classes."

Classes were held on five successive nights from 7:30 to 9:30 p.m. The first hour was given to lectures presenting principles with the aid of charts and movies. The second half was devoted to discussions of principles by members of the class.

Mr. McIntosh added that the classes have sharply reduced accidents in many cases. A recent survey of firms whose key men have taken the course showed reductions of from 25% to 44% in lost-time accident frequency.

The classes were held in the Floridan Hotel and conducted by Stephen J. Roche, safety consultant of West Palm Beach. Twenty-five of those attending successfully completed the course and were awarded certificates signed by officers of their companies, Mr. McIntosh and Mr. Roche.

New Safety Policy Outlined

Since Korea the nation's work injury-rate has increased 12%, reversing the downward trend in accidents registered between 1946 and 1950, the National Labor-Management Manpower Policy Committee recently stated.

Calling this an "extravagant waste of manpower," the committee noted that safety depends on the complete cooperation of both management and labor.

Secondly, it said that employers should consider safety their "legal and moral obligation," provide and carry out a safety program, operate safe plants and plan and maintain a system of inspection to discover correctable hazards.

Thirdly, employees were directed to use the safeguards provided by management, observe safety rules and regulations and watch out for the safety of fellow employees.

Indirect Cost of Accidents

The accident: A sewer contractor was digging a trench 30 inches wide and 5 feet deep. Some 2 feet of rock at the bottom of the trench had to be blasted. Eight holes were drilled in the rock and a stick of dynamite was inserted in each hole. Timbers and a cable mat had been placed over the area and the back hoe bucket was resting on the top of the cable mat. The blast was expected to go in the direction of the back hoe where most of the protection had been placed. However, the blast discharged and forced a 2-pound rock through the unguarded opening at the opposite end. The rock crashed through the window of a house 250 feet away, striking a woman in the face.

Direct cost: High hospital costs for treatment to the woman's injuries which included a delicate operation on her nose. Damage to the house was $50.

Proximate results: The foreman who did the blasting was not licensed. He did not provide 100% cover over the area to be blasted. The contractor had neglected to notify the insurance company about his blasting operations and the damage was not covered.

Indirect cost: Because of the accident, the contractor was not allowed to finish the job. The loss cost the contractor an estimated $2,000. The injured woman and her husband sued the contractor for $75,000 and were awarded $40,000, which was $25,000 above the limits carried.

Prevention: Make sure that qualified personnel are in charge of all blasting operations. Notify the insurance carrier of the operations so that they will be covered. Also, carry high enough limits to cover the more serious accidents.

Industry Seeks Self-Regulation in Safety

- Safety Congress Considers More Effective Measures

» THREE DAYS of intensive discussion of safety in construction were held in connection with the 40th National Safety Congress and Exposition in Chicago last month.

The consideration of how to develop more effective safety measures on construction jobs on a voluntary basis was given impetus by the realization that unless industry does take effective steps there is the likelihood of federal and state legislation which will bring further hampering restrictions to the industry.

Meetings were held of the Construction Section of the National Safety Council, of the liaison committee of the Associations of Casualty Insurers and the Accident Prevention Committee of The Associated General Contractors of America, and the liaison committee of the A.G.C. Secretaries' and Managers' Council. The meetings of all National Safety Council divisions and sections brought thousands of safety experts to Chicago during the week.

The first construction meeting was held October 21. More than 200 attended, with H. B. Alexander, Harrisburg, Penna., chairman of the A.G.C. Accident Prevention Committee, presiding.

Reports were made by Mr. Alexander, and by Mr. Otto Holmskog, of Employers Mutual Liability Insurance Co., Wausau, Wisc., of studies conducted of what services the National Safety Council provides for construction contractors, and what the construction industry wants from the council. The reports were thoroughly discussed and the conclusion reported to the council.

Another meeting was held October 23 for thorough discussion of the subject of safety needs and insurers cooperation in construction.

Meetings of the National Safety Council Construction Section were held the afternoons of October 21 and 22. At the first meeting Robert M. Hoover, Kansas City Bridge Co., Kansas City, described the A.G.C. of Missouri accident prevention program, which was begun this year.

On October 22 a symposium was held on construction accidents by safety engineers representing contractors, U. S. Army Engineers, and the insurance industry. Participating were Homer D. Hunt, Director of Safety, South Atlantic Division, U. S. Engineers; Dale Medsker, Safety Engineering Division, National Surety Corp.; and Robert A. Calvert, Calvert Iron Works, Inc., all of Atlanta.

The program by which the Florida Industrial Commission teaches safety to superintendents and foremen in the state was described by Albert P. McIntosh, consultant.

Managers of A.G.C. chapters and branches met October 22 to exchange ideas on how to conduct chapters safety programs. George M. Schmelzer, Pennsylvania Builders Chapter, Harrisburg, presided.

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Alexander Voted to Safety Council Post

- Other A.G.C. Members Named to Committees at Chicago

» H. B. ALEXANDER, of H. B. Alexander & Son, Harrisburg, Pa., was elected general chairman of the Construction Section of the National Safety Council at the 40th National Safety Congress & Exposition in Chicago last month. Mr. Alexander is chairman of the Accident Prevention Committee of The Associated General Contractors of America.

J. George Robinson, assistant manager of the A.G.C. of Missouri, Jefferson City, was elected vice chairman and secretary. H. W. Richardson, editor, *Construction Methods & Equipment*, New York City, is the retiring general chairman.

Many others connected with A.G.C. were appointed to the Construction Section's Executive Committee and to other committees. Included are: S. D. Webb, Dravo Corp., Pittsburgh; H. S. Benton, W. S. Bellows Construction Corp., Houston; C. H. Black, Stone & Webster Engineering Corp., Boston; C. M. Cahill, Massman Construction Co., Kansas City; C. M. Cole, Bechtel Corp., San Francisco; Kenneth F. Coughlin, Kansas City Bridge Co., Kansas City.

Also Robert M. Evenden, Guy F. Atkinson Co., South San Francisco; G. O. Griffin, Dravo Corp., Pittsburgh; Ray H. Hahn, Allegheny Asphalt and Paving Co., Pittsburgh; Robert M. Hoover, Kansas City Bridge Co., Kansas City; William F. Koeppen, Peter Kiewit Sons' Co., Omaha; Clement J. Leupke, T. H. Mastin Co., St. Louis; O. Lupinski, Lupinski, Inc., Milwaukee; George P. O'Rourke, Sr., Dallas; Phillip Thoin, The John W. Cowper Co., Buffalo; E. N. Ziner, Volpe Constr. Co., Malden, Mass.; Jerome J. Williams, Morrison-Knudsen Co., Boise; Richard Koss, Koss Construction Co., Des Moines, Iowa; George E. Aro, United Engineers & Constructors Inc., Philadelphia; William G. Hawkins, Winston Bros. Co., Minneapolis; and Kenneth A. Hyde, C. F. Braun & Co., Alhambra, Calif.

Also George A. Benish, Milwaukee Chapter, A.G.C.; R. J. Hendershott, A.G.C. of Minnesota; Kenneth R. Lewis, Kansas Chapter, Builders Division, A.G.C.; George W. Combs, Michigan Chapter; Harry J. Kirk, manager, Research and Safety, and James M. Sprouse of the A.G.C. national office, and William E. Woodruff of THE CONSTRUCTOR.

Engineers Sponsor Meeting

The Tulsa Corps of Engineers recently sponsored a 1-day safety conference for the construction industry at the Tulsa Hotel. The program, covering the causes and prevention of accidents peculiar to the building and heavy construction industries was presented by members of the Corps and general contractors from Oklahoma, Texas, Louisiana, Missouri, Tennessee and Arizona.

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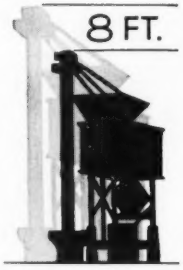
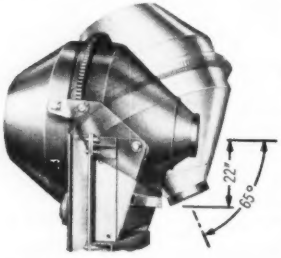


Burmeister's patented "tilt-up" feature—which reduces the mixer's headroom requirement—permits lower plant heights. This means easier crane loading, lower power costs, lower initial costs, less costly "conversions," increased portability, and better over-all control.



● In addition to reducing plant height, Burmeister's 3 cu. yd. "Tilt-Up" Mixer (left) provides a steeper 65° discharge from one spot, eliminates segregation of concrete and the danger of accidental discharge. It is simple to install, and has an integral hydraulic system—no compressor is required. Write for name of your nearest Burmeister Distributor, without obligation.

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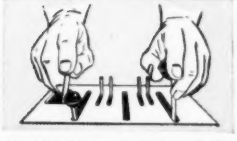

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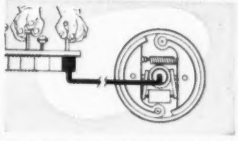

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- A.G.C. Supports Chamber of Commerce Resolution
- Asks Controls Relaxation Now, Suspension Jan. 1

» CONSTRUCTION materials are plentiful and controls are no longer needed, A.G.C. members in Western and Southwestern states reported to President Arthur S. Horner and Managing Director H. E. Foreman, who visited chapters in that area in the latter part of September and October.

To retain controls when suppliers of steel and other construction materials are soliciting orders would only destroy public confidence in their necessity as an instrument of defense, contractors of Washington, Idaho, Utah, California, Colorado, New Mexico, Montana, Oregon and Arizona maintained.

Upon their return to Washington, D. C., Mr. Horner and Mr. Foreman supported a resolution adopted by the U. S. Chamber of Commerce Oct. 23 calling on the government to relax its construction controls immediately and to suspend them Jan. 1, 1953, with necessary protection of direct defense needs. (See page 21.)

The tremendous backlog of construction including highways, schools and municipal projects imposes a heavy responsibility on the contractor, Mr. Horner and Mr. Foreman reported. Unnecessary controls must not be allowed to hamper the contractor in this job, they said.

At San Francisco: Chas. L. Harney, national director; Dallas Young, vice president, Northern California Chapter, and Fred J. Early, Jr., national director, all of San Francisco; H. E. Foreman, A.G.C. managing director; A. S. Horner, Denver, A.G.C. national president; Frank F. Burrows, Burlingame, Calif.; president, Central California Chapter and vice chairman, A.G.C. Building Division; Harold O. Parish, Benicia, Calif., president, Northern California Chapter; John MacLeod, Paramount, Calif., national director and 1953 nominee for A.G.C. vice president; Melvin Gautier and Frank G. Corker, both of San Francisco, vice president and secretary-manager respectively, Central California Chapter, and Winfield H. Arata, San Francisco, secretary-manager, Northern California Chapter.

At Albuquerque: W. M. Cooper, Santa Fe, president, New Mexico Building Branch; Mr. Horner; Chas. H. Lembke, Albuquerque, national director; Mr. Foreman; Marshall J. Wylie, Albuquerque, Advisory Board member, and B. B. Armstrong, Roswell, New Mexico, president, Associated Contractors of New Mexico.

It will be necessary to find means of financing commercial, state and municipal projects so they may be gotten underway as defense and industrial construction tapers off, the A.G.C. officers said. They reported that they had been much impressed with the importance of the A.G.C.'s comprehensive program and the prestige enjoyed by the association and its members.

Internal relations of the construction industry were discussed by Mr. Horner, who recommended the formation of local joint committees with subcontractors to work toward harmonious relationships within the industry as set forth in a statement of principles by the Governing and Advisory Boards of A.G.C. recently.

It would be much better for the construction industry, said Mr. Horner, if instead of attempting to have the government legislate harmony, businessmen sat down together to arrive at their own solutions.

Legislation Discussed

Mr. Foreman reported that in the event a tax bill were considered at the next session of Congress, a study of its possible effect on construction markets would be conducted by A.G.C. He said efforts would be continued to obtain legislation permitting judicial review of disputes arising under government construction contracts.

The trip provided an excellent opportunity for the exchange of information and served to familiarize the national leaders with local conditions. Press interviews and coverage of addresses brought the contributions of the construction industry to the national defense and civilian welfare to the attention of the public.

The itinerary of the tour: Sept. 29, meeting in Denver with the Colorado Contractors Association and the Colorado Building Chapter; Sept. 30, Albuquerque, New Mexico Building Branch and Associated Contractors of New Mexico; Oct. 2, San Diego, San Diego Chapter; Oct. 3, Los Angeles, Southern California Chapter; Oct. 6, San Francisco, Northern and Central California Chapters; Oct. 8, Spokane, Pacific Northwest Chapters; Oct. 9, Boise, Idaho Branch; Oct. 10, Salt Lake City, Intermountain Branch.

In the latter part of November, Mr. Horner, Mr. Foreman and C. P. Street, 1953 A.G.C. presidential nominee, will visit chapters in six Southern cities: Miami and Tampa, Fla.; Atlanta, Ga.; Birmingham, Ala.; Shreveport, La., and Dallas, Texas.

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Nov. 1952

Ole Hansen Dies at 70

Ole Hansen, 70, president of Ole Hansen & Sons, Inc., Pleasantville, N. J., a district director of the national A.G.C. and past president of the A.G.C. of New Jersey, died Sept. 30 at his home in Ventnor City, N. J., following a long illness.

Though in ill health for the past year, Mr. Hansen continued to direct his business until three months ago. Even while confined to the hospital, he was consulted on construction matters.

Considered by many as the foremost authority on bridge construction in his state, Mr. Hansen was approached by state highway commissioners for the past 30 years for advice on bridge construction problems.

He came to this country from Norway in 1901 and was in the contracting business ever since. He moved to Ventnor City in 1926 and organized his own contracting business. Prior to this he had been a construction superintendent.

Many Large Bridges

Many of the larger bridges in the state were constructed by him, including the old and new bridges over Barnegat Bay. Other projects included the Stickel Memorial Bridge in Newark, said to be the heaviest lift bridge in the world; the Kearny-Newark Bridge; five bridges over the Passaic River dating from 1904; numerous overpasses and underpasses in the state and the world's first concrete boardwalk in Wildwood in 1925.

Active in labor relations, he was a member of the A.G.C. Labor Committee for many years.

In 1940 he was elected president of the A.G.C. of New Jersey and was a director and trustee afterwards. He was secretary-treasurer of the chapter at the time of his death.

A civic leader, he was an official of the local Chamber of Commerce, chairman of the Civil Defense Council of South Jersey, director of the Ventnor City National Bank, a member of the Pioneer Lodge F. and A. M. of Hackensack and the Atlantic City Rotary Club.

Surviving Mr. Hansen are his wife, Mrs. Caroline J. Christiansen Hansen; two sons, Haubert J. of Linwood and Walter of Margate; two daughters, Mrs. Eleanore Matzat of Garden City, Long Island, and Mrs. William Nimal of Ventnor, and eight grandchildren.

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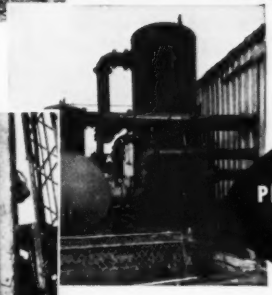

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William E. Mohler

William E. Mohler, Sr., 58, retired Indianapolis building contractor, past president of the Indiana General Contractors' Association and former director of the national A.G.C., died Sept. 22 while attending a cattle sale in Sandwich, Ill.

Mr. Mohler

A cattle raiser for the past few years, Mr. Mohler took pride in his Brown Swiss dairy cattle on his farm near Zionsville, Ind.

Mr. Mohler joined the J. L. Simmons Co., Inc., Indianapolis, first as an engineer and later became vice president and general manager. While working with this company he directed work on the Coliseum at the State Fairgrounds and the large International Harvester Co. plant in the city. At the time of his death he was associated with Thomas L. Burrell, Inc.

He was born in Minneapolis, studied at the University of Minnesota and started his career in that city.

Besides his work with the A.G.C., Mr. Mohler was a former president of the Construction League of Indianapolis, a member of the Building Contractors' Association of Marion County and he helped to organize the Indiana Building Congress.

Surviving Mr. Mohler are his widow, Mrs. Leona Mohler; sons William E., Jr. and Forest of Indianapolis; a daughter, Mrs. H. J. Ruebke, Ada, Minn.; six brothers and three sisters.

Ellis W. Barker

Ellis W. Barker, 52, president of the Intermountain Branch in 1948 and former national director of the A.G.C., died last month of cancer at his home in Salt Lake City.

Active in the national association's affairs, he was on the Advisory Board in 1948, a national director in 1949 and for the past three years he served with Apprenticeship and Market Development Committees. Last year he was vice-chairman of the latter committee. At the time of his death Mr. Barker was a member of the American Institute of Architects-A.G.C. Joint Cooperative Committee.

Born in Ogden, Jan. 7, 1900, Mr. Barker attended that city's schools, the Weber Academy and was graduated from the University of Utah in 1924. He was elected to the Beehive Honor Society while at the university, was president of the student body in 1923 and worked for the construction of the campus student union building.

Socially Prominent

Besides being a building contractor and engineer, Mr. Barker was a member of the Salt Lake Kiwanis Club, the Salt Lake City Chamber of Commerce, Bonneville Knife and Fork Club, University and Country Clubs. He was also former president and executive secretary of the university's alumni association and a charter member of Sigma Pi's Utah Chapter.

Surviving Mr. Barker are his widow, Mrs. Virginia Freeze Barker; a son, Ellis, Salt Lake City; two daughters, Mrs. Harlan E. (Marie Louise) Nelson and Mrs. Ralph A. (Marilyn) Edwards, both of Berkeley, Calif.; four brothers, Desmond J., Chico, Calif., Clarence E., Arlington, Va., Howard and Elwood I. of Salt Lake City; two sisters, Mrs. D. W. (Leantine) Knighton, Ogden and Mrs. David W. (Ruth) Isakson, Salt Lake City.

Robert W. Collins

Robert W. Collins, 57, past president of the Houston Chapter, A.G.C., died of a heart ailment last month at his home in Houston.

Mr. Collins

Mr. Collins, president of the Southwestern Constr. Co., directed the Houston Chapter in 1941 and 1942. He served on the chapter's board of directors for many years and was chairman of the group's labor committee during a critical period of labor relations in the city. In World War II he was appointed to the regional War Labor Board in Dallas. At the time of his death Mr. Collins was serving on a joint committee with the American Institute of Architects.

He became president of the Southwestern Constr. Co. in 1932 after moving to Houston in 1919. His company

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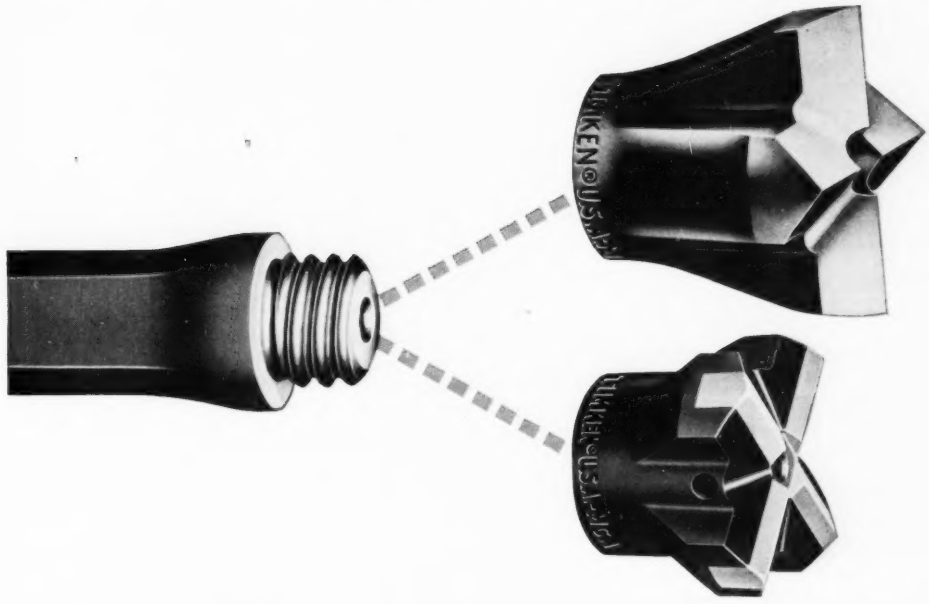

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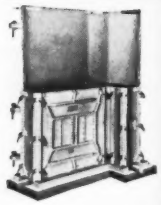

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has constructed such buildings as the Houston Public Library, the Plaza Hotel, the Commerce Building, the library building at the University of Houston, a high school, St. Paul's Methodist Church and many additions and wings to St. Joseph's Hospital.

Born in New Orleans in 1895, Mr. Collins received his engineering degree from the University of Michigan and served as a lieutenant of artillery in France during the first World War.

Socially prominent, he was a member of the Tejas Club, the Houston Country Club, the Eagle Lake Rod and Gun Club and the Theta Delta Chi engineering fraternity.

He is survived by his wife, a daughter, a sister and two grandchildren.

Florence Smith Lapham, officer in the Northern California Chapter, A.G.C., died early last month in San Francisco's Mount Zion Hospital following a long illness.

Mrs. Lapham for the past 20 years had been assistant chapter secretary and was well known to Northern California contractors. Perhaps she is best known for her "Spot News," the chapter's bulletin and "Flashes," an information sheet for members.

Born in Staples, Minn., she came to San Francisco after living a few years in Helena, Mont. Her activities in the chapter helped its membership to grow from 65 to nearly 300.

She is survived by her husband, Walden M. Lapham, and a sister.

Andrew J. McKenzie, Sr.

Andrew Jackson McKenzie, Sr., 69, founder of the McKenzie Const. Co. and first president of the old Texas Branch, A.G.C. in 1923, died at his home in San Antonio early last month.

He helped construct the Transit Tower, the Alamo National Bank, the Plaza Hotel and the Southwestern Bell Telephone Co. building in the city.

Mr. McKenzie

Other projects of his include the Olmos Dam, the Marshall Ford Dam on the Colorado River, the repair of flood-damaged sections of the Mathis Dam in 1935, two Memphis subways in 1912 and various sewer projects in the state.

Beginning as a rodman and instrumentman on the Frisco Railroad at Joplin, Mo., 1907, he became assistant city engineer and then city engineer and street commissioner the following year. He founded his general contracting firm in Webb City, Mo., in 1912, but moved to San Antonio in 1914.

His company is a member of three Texas chapters, the Texas Highway Branch, Municipal Contractors Association and the San Antonio Chapter.

Mr. McKenzie was past president of the Texas section of the American Society of Civil Engineers, past president of the local Chamber of Commerce and a past potentate of the Alzafar Shrine.

He is survived by his widow, Mrs. Eulah McKenzie; a son, Andrew J., Jr., president of the Municipal Contractors Association, Dallas; daughters, Mrs. Edward Starr, Jr., San Antonio, Mrs. James Allen, Camden, Ark.; brothers, James P. McKenzie, San Antonio and Lloyd A. McKenzie, Ft. Worth and sisters, Mrs. Cleveland Denton, Centralia, Mo. and Miss Dollie McKenzie, Portland, Ore.

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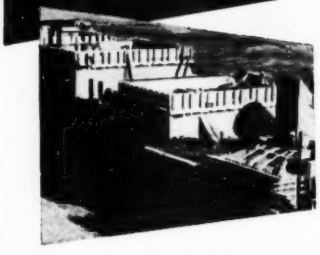

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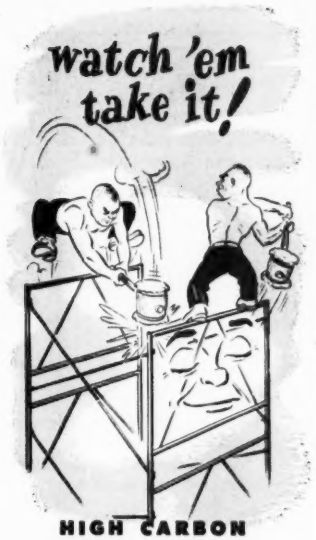

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CHAPTERS • BRANCHES

A.G.C. Branch and Chapter Meetings

A monthly, cumulative list of annual meetings scheduled by chapters and branches of The Associated General Contractors of America, as reported to THE CONSTRUCTOR:

Nov. 14-15. COUNCIL OF A.G.C. CHAPTERS, State of Louisiana, Inc. New Orleans. Roosevelt Hotel.

Nov. 20. CHICAGO BUILDERS' CHAPTER. Chicago. Builders Club.

Nov. 30-Dec. 1. MUNICIPAL CONTRACTORS ASSN. Dallas. Adolphus Hotel.

Dec. 1-2-3. INDIANA HIGHWAY CONSTRUCTORS, INC. French Lick, Ind. French Lick Springs Hotel.

Dec. 2. AUSTIN CHAPTER. Austin. A.G.C. Plan Room.

Dec. 2. COLORADO BUILDING CHAPTER. Denver. (Not Selected)

Dec. 2. DALLAS CHAPTER. Dallas. Dallas Athletic Club.

Dec. 2. FLORIDA WEST COAST CHAPTER. Tampa. (Not Selected)

Dec. 3-4. WISCONSIN CHAPTER. Milwaukee. Plankinton Hotel.

Dec. 3-4-5. HIGHWAY CONSTRUCTION INDUSTRY OF SOUTH DAKOTA. Pierre. St. Charles Hotel.

Dec. 5-6. NORTHERN CALIFORNIA CHAPTER. San Francisco. Palace Hotel.

Dec. 6. CENTRAL LOUISIANA CHAPTER. Lafayette. Jacob's 4 Corners Restaurant.

Dec. 6. NEW MEXICO BUILDING BRANCH. Albuquerque. Hilton Hotel.

Dec. 8 SPOKANE CHAPTER. (Not Selected)

Dec. 8-9. A.G.C. OF ILLINOIS. Springfield. Leland Hotel.

Dec. 8-9. A.G.C. OF NORTH DAKOTA. Fargo. Gardner Hotel.

Dec. 9. SEATTLE CHAPTER. Seattle. Lounge in A.G.C. Building.

Dec. 9-10. MASTER BUILDERS OF IOWA. Des Moines. Hotel Savery.

Dec. 10-11. NEW YORK STATE CHAPTER, INC. Buffalo. Statler Hotel.

Dec. 11. MEMPHIS CHAPTER. Memphis. A.G.C. Building.

Dec. 12. SOUTH TEXAS CHAPTER. Corpus Christi. Plaza Hotel.

Dec. 14. SAN ANTONIO CHAPTER. San Antonio. 227 Transit Tower.

Dec. 17. A.G.C. OF MASSACHUSETTS. Boston. Hotel Touraine.

Jan. 7-8. A.G.C. OF IOWA. Des Moines. Hotel Savery.

Jan. 7-8. A.G.C. OF MISSOURI. Kansas City. President Hotel.

(Continued on page 88)

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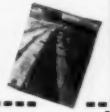

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HOW TO HANDLE WET JOBS

#11 of a Series

L. I. LIGHTING CO.
POWER PLANT ADDITION
Glenwood Landing, N. Y.
Foundations: Hendrickson Bros.

WELLPOINTERS MASTER DEEP POWER PLANT CUT

DEEPEST SUBGRADE on this job was 23 ft below Manhasset Bay (see photo) and 29 ft below spring-fed ground water table. Underlying soil was sharp sand with a 6 ft overburden of very plastic clay. Maximum stability of excavation was mandatory to safeguard adjacent Power Plant and highway.

• Operating frequently in "Wellpoint Country," this heavy construction contractor encounters many wet jobs and has learned from repeated experiences how helpful Griffin engineers can be. Dry, stable working conditions were achieved quickly and economically in spite of high head and tricky working conditions.

• When a wet job calls for know-how, call for Griffin.

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WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
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CHAPTERS • BRANCHES

Jan. 8. BALTIMORE BUILDERS CHAPTER. Baltimore. Park Plaza Hotel.
Jan. 8. SAN DIEGO CHAPTER. San Diego. El Cortez Hotel.
Jan. 9-10. INTERMOUNTAIN BRANCH. Salt Lake City. Hotel Utah.
Jan. 9-10. MONTANA CONTRACTORS' ASSN., INC. Butte. Hotel Finlen.
Jan. 9-10. MONTANA BUILDING CHAPTER. Butte. Hotel Finlen.
Jan. 10. A.G.C. OF DELAWARE. Wilmington. Hotel DuPont.
Jan. 10. OKLAHOMA BUILDERS CHAPTER. Oklahoma City. Skiruin Hotel.
Jan. 12. PORTLAND CHAPTER. Portland. Multnomah Hotel.
Jan. 13. MASTER BUILDERS ASSN., INC. District of Columbia. Mayflower Hotel.
Jan. 14. PHILADELPHIA CHAPTER. Philadelphia. The Barclay.
Jan. 15-16. KANSAS CONTRACTORS ASSN. Kansas City. President Hotel.
Jan. 15-16. VIRGINIA BRANCH. Roanoke. Hotel Roanoke.
Jan. 16. ALABAMA BRANCH. Birmingham. Tutwiler Hotel.
Jan. 16. MILWAUKEE CHAPTER. Milwaukee. Schroeder Hotel.
Jan. 16. MOUNTAIN PACIFIC CHAPTER. Seattle. Benjamin Franklin Hotel.
Jan. 17. MISSISSIPPI VALLEY FLOOD CONTROL BRANCH. New Orleans. Hotel Roosevelt.
Jan. 19. NEBRASKA BUILDING CHAPTER. Omaha. Hotel Fontenelle.
Jan. 19. NEBRASKA CHAPTER. Omaha. Hotel Fontenelle.
Jan. 19-20-21. PIPE LINE CONTRACTORS ASSN. Houston. The Shamrock.
Jan. 29-30-31. A.G.C. OF MINNESOTA. Minneapolis. Radisson Hotel.
Jan. 30. CENTRAL CALIFORNIA CHAPTER. San Francisco. St. Francis Hotel.
Jan. 30. IDAHO BRANCH. Boise. Hotel Boise.
Jan. 30-31. COLORADO CONTRACTORS ASSN., INC. Denver. Shirley-Savoy Hotel.
Feb. 10. TACOMA CHAPTER. Tacoma. (Not Selected)
Feb. 11. LOUISVILLE CHAPTER. Louisville. Chapter Building.
Feb. 12. CONSTRUCTORS ASSN. OF WESTERN PENNSYLVANIA. Pittsburgh. Hotel William Penn.
Mar. 11. HOUSTON CHAPTER. Houston. Ben Milam Hotel.
April. BUFFALO CHAPTER. Buffalo. (Not Selected)

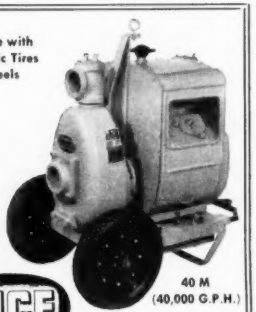
Tentative Dates

Jan. 5. ASSN. OF OKLAHOMA GENERAL CONTRACTORS. Oklahoma City. Huckins Hotel.
Jan. 14. SOUTHERN CALIFORNIA CHAPTER. Los Angeles. Statler Hotel.
Jan. 16 or 23. A.G.C. OF WEST VIRGINIA. Charleston. Daniel Boone Hotel.
Jan. 21. DETROIT CHAPTER. Detroit. Detroit Athletic Club.
Jan. 27. SOUTH FLORIDA CHAPTER. Coral Gables. Coral Gables Country Club.
Feb. KENTUCKY HIGHWAY DIVISION. Louisville. Kentucky Hotel.
Feb. or Mar. METROPOLITAN BUILDERS ASSN. OF NEW YORK CITY. New York. (Not Selected)

Conn. Officers Elected

The Connecticut State Chapter of The Associated General Contractors of America held its 6th annual meeting Oct. 13 in New Haven and elected A. J. M. Giardini, Associated Construction Co., president for the new fiscal year. Other officers: William Noble, Jr., W. J. Megin, Inc., vice president; Chester W. Moore, Torrington Building Co., Torrington, secretary; George R. Johnson, Hartford, treasurer, and C. F. Grisham, New Haven, executive vice president.

Available with Pneumatic Tires Steel Wheels or Skids



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40 M
(40,000 G.P.H.)
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CENTRIFUGAL PUMPS
Engine, belt, and electric driven pumps with many new features to give you low cost, dependable performance. A. G. C. rated. Easily replaced wearing parts keep Rice Pumps young at low cost.
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INDEPENDENT PNEUMATIC TOOL COMPANY
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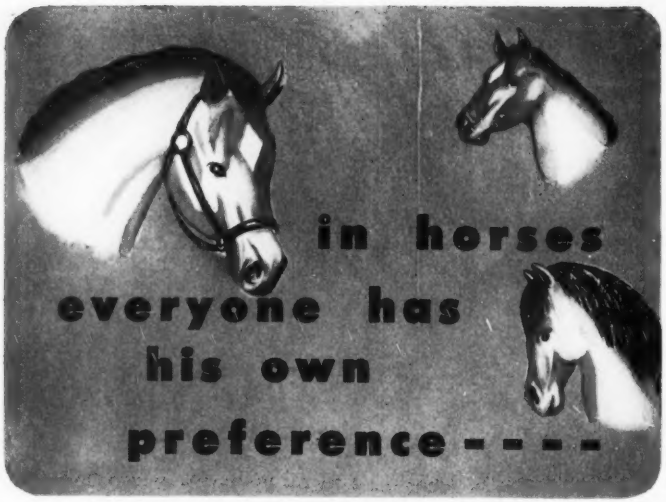
SUMP PUMPS • NAIL DRIVERS • SHEETING DRIVERS
CEMENT HAMMERS • ELECTRIC HAMMERS AND SAWS

BUY IT from your DISTRIBUTOR

FACTORY SERVICE BRANCHES IN 20 PRINCIPAL CITIES



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THIS PUMP COMPLIES WITH
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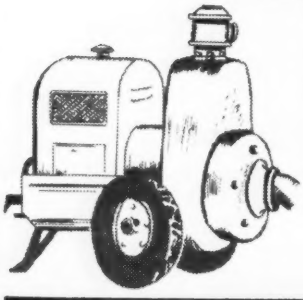

Pumps that wear the A. G. C. label are "Thoroughbreds". That is, they must meet certain basic standards of pump performance set up by the Pump Bureau and approved by the A. G. C. Members of the Pump Bureau, reliable pump manufacturers, meet the standards in their products which are identified by the official A. G. C. Standard Plate. Listed below are Pump Manufacturers that guarantee these standards in the pumps they sell you.

CONTRACTORS PUMP BUREAU
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Munsey Building, Washington 4, D. C.

STERLING MACHINERY CO. Los Angeles, California	CARVER PUMP CO. Muscatine, Iowa	THE JAEGER MACHINE CO. Columbus, Ohio
WORTHINGTON CORPORATION Construction Equipment Division Plainfield, New Jersey	C. H. & E. MANUFACTURING CO. Milwaukee, Wisconsin	MARLOW PUMPS Ridgewood, N. J.
	CHAIN BELT CO. Milwaukee, Wisconsin	NOVO ENGINE CO. Lansing, Michigan
LEYMAN MFG. CORP. Cincinnati 2, Ohio	CONSTRUCTION MACHINERY CO. Waterloo, Iowa	RICE PUMP & MACHINE CO. Grafton, Wisconsin
BARNES MANUFACTURING CO. Mansfield, Ohio	THE GORMAN-RUPP CO. Mansfield, Ohio	ESSICK MANUFACTURING CO. Los Angeles, California

Dragline — *Harnischfeger Corp., 4400 W. National Ave., Milwaukee 46.* Model 1855 heavy-duty dragline has working weight of 600,000 lbs. and is capable of handling 8-cu. yd. bucket with 120′ boom or 7-cu. yd. bucket with 150′ boom. It is powered by 8-cylinder Cooper-Bessemer FV8 diesel engine which develops 590 h.p. at 900 r.p.m. Maximum height is 32′, with cab top 19½′ above ground. Distance from ground to bottom of counter-weight is 5½′. Ground pressure of 1855 is 16.2 lbs. per sq. in. Overall width of crawlers, with 60″ shoes, is 22½′ while crawler length is 29′. Hoist line speed is 246′ per minute and digging line speed is 199′ per minute. Hoist line pull is 75,600 lbs. and digging line pull is 93,500 lbs. Traveling speed of machine is .5 m.p.h., while its rotating speed reaches 3.54 r.p.m. Machine has 4 separate "Magnetorque" units which control every motion of machine.

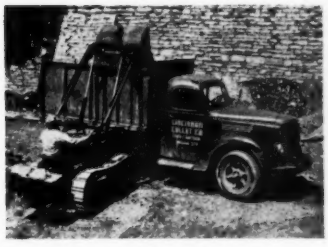
Harnischfeger Model 1855

Insulated Clothing—*Insulated Clothing Mfg. Co., 33 E. 38th St., New York 16.* "Weather-Alls" are light-weight 2-piece garments made of DuPont nylon quilted over air cell insulation which controls temperature. Manufacturer states they will keep wearer warm in temperatures as low as —40°. Garments are shirt and slacks which may be worn over light-weight underwear or under any kind of clothing. They weigh 39 oz. They can be dry-cleaned or washed, as insulation does not disintegrate. Caps, hoods, gloves, socks and topcoat of insulated material are available, as well as vest and short suit for less severe climate conditions.

Compressors—*Le Roi Co., 1706 S. 68th St., Milwaukee 14.* Five portable compressors are offered in capacities of 85 c.f.m., 125 c.f.m., 185 c.f.m., 250 c.f.m. and 365 c.f.m. They can be supplied with Le Roi gasoline engines or International Harvester diesel engines.

Tractors—*Oliver Corp., 19300 Euclid Ave., Cleveland 17.* "OC-18" crawler tractor features ease of operation. Air steering is standard equipment. Over-center clutch runs across width of dashboard so operator can locate it without taking eyes off job. Other features include push-button electric starting with cold weather starting aid as standard equipment; center positioned gear shift lever; parking brakes; throttle located at right arm rest; 2-man upholstered seat. Tracks are designed for maximum ground contact. OC-18 has 126 rated h.p. ¶ Oliver announces "OC-3" crawler tractor weighing less than 3,600 lbs. and rated at 21.85 drawbar h.p. and 26.36 belt h.p. It is designed for such jobs as bulldozing, backfilling foundations, loading out scrap material, winch operations, cleaning ditches, moving concrete.

Oliver "OC-18" tractor



Oliver "OC-3" tractor

Metal Corner Protection for Gypsum Wallboard—*United States Gypsum Co., 300 W. Adams St., Chicago 6.* "Perf-A-Bead," for reinforcing outside corner angles, uncased door and window openings, pilasters, beams and soffits, consists of metal bead to protect corner with wings or flanges on each side. It is applied with "Perf-A-Tape" cement and is available in 8′ lengths, packed in 125-piece master cartons and 25-piece junior cartons.

Lucky?... The fair, fast, friendly settlement of an employee's insurance claim by Employers Mutuals isn't a matter of luck.

It reflects his employer's good judgment in selecting this mature insurance organization. Our claim men—like their teammates—are company-trained to relieve our policyholder-owners of every possible detail and maintain our unchallenged reputation as "good people to do business with."

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EMPLOYERS MUTUAL LIABILITY INSURANCE COMPANY OF WISCONSIN
EMPLOYERS MUTUAL FIRE INSURANCE COMPANY

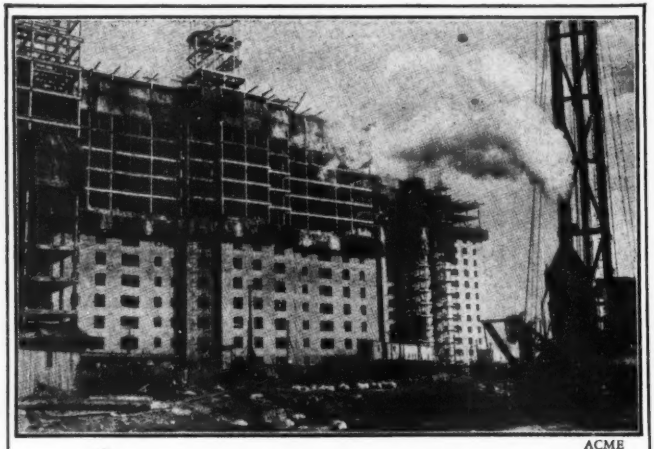
Material Elevator — *Construction Machinery Sales Co., Waterloo, Iowa.* Heavy-duty model of "Roll-O-Hoist" features 6′ "walk-through" opening for handling concrete buggies. Cross braces adjustable every 2′ permit opening to be made at any loading or unloading level, so that buggies can be rolled directly through hoist frame. Designated as Model K, unit consists of rigid, vertical all-steel frame mounted on 2 pneumatic rubber tires and equipped with 47″ wide by 57″ long platform. Power is supplied by 7½ h.p. gasoline winch or 3 h.p. electric motor. Remote control mechanism enables operator to govern motor switch or engine throttle and positive-acting mechanical brake from any position on hoist. Limit stops at top and bottom prevent platform from over-traveling, and cam-operated safety device secures elevator to upright frame in event of cable breakage.

Truck Body—*DeKalb Commercial Body Corp., DeKalb, Ill.* New body, designed for building contractors, is offered in 3 sizes—12′, 14′, 16′ long. Body is 89½″ wide, equipped with 42″ stationary steel sides and is available with 24″ steel tail gate. Flooring is of 2″ select center-matched pine, tongued and grooved. Diamond tread safety plate laid over standard flooring is optional. High-tensile steel channels compose bolsters and longitudinal sills are of select hardwood. Upright posts and header rails are of 11-gage and 18-gage high-tensile steel, 1¼″ square. Bulkhead and side panels are of 16-gage steel sheets, electrically welded to frame. Units weigh 1,450 lbs. with open end and 1,525 lbs. complete with 24″ steel tail gate.

DeKalb truck body

Radio Base Station—*Motorola Communications and Electronics Division, 4545 Augusta Blvd., Chicago 51.* Remotely controlled base station is used as automatic relay station to increase area of operations of base-to-mobile communications system or to extend length of signal path between end points of point-to-point radio relay system. It is also used when it is to be installed in location some distance from point of audio termination. Base station is housed in weather-proof cabinet suitable for pole mounting. Components include Sensicon receiver circuit, Permakay filter, instantaneous deviation control and Capacitance discriminator.

Tarpaulins—*American Agency, 799 Broadway, New York 3.* Tarpaulins made of 10-gage Vinylite are resistant to abrasion, motor oils and most chemicals and will not warp or shrink. They are light in weight and are non-inflammable. Tensile strength is 200 lbs. Offered in sunproof opaque navy blue, with grommets inserted at 3′ intervals, they are available in sizes from 9′ x 8′ to 22½′ x 22½′.



ACME

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When American business needed positive assurance of its continued advance toward higher ground, corporate suretyship provided bond forms suitable to accommodate that expansion and thereby shouldered some of the burden incident to progress.

Congress went a step further in 1935 by enacting the Miller Act, which improved the position of labor and material suppliers through the requirement of a separate bond guaranteeing the payment of labor and material bills. Many states and municipalities followed this practice, until today the requirement of the so-called companion bonds, one guaranteeing performance and the other payment of labor and material costs, is almost universal.

(Sixth in a series of advertisements tracing the history of the Fidelity and Surety Industry)

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Standard Reduction

PHŒNIX ASSURANCE CO., Ltd.
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UNITED FIREMEN'S INSURANCE CO.
THE UNION MARINE & GENERAL INSURANCE CO., Ltd.
LONDON GUARANTEE & ACCIDENT CO., Ltd.
PHŒNIX INDEMNITY COMPANY

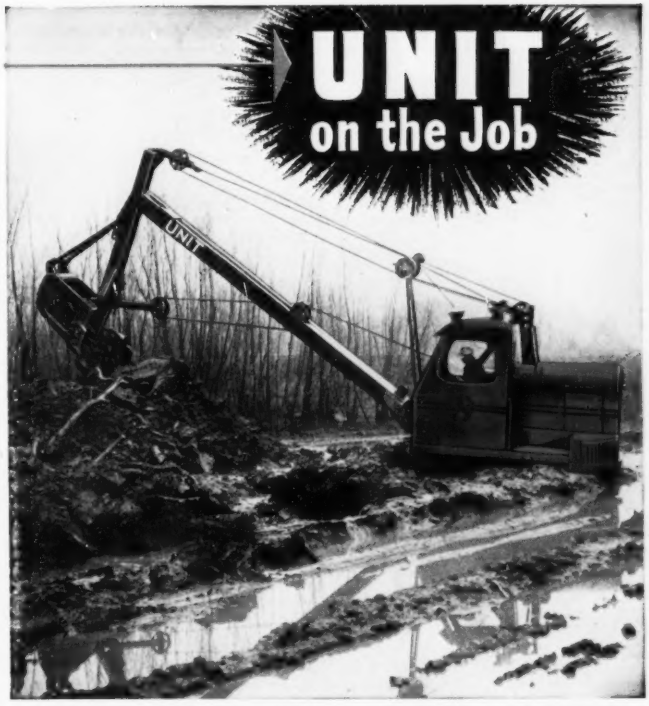
Grout—*A. C. Horn Co., 10th St. and 44th Ave., Long Island City 1, N. Y.* Acid-resisting non-shrinking grout is designed for tile floor joints in installations where resistance to effects of acids, alkalis and industrial spillage is essential. Grout flows in joints down to thickness of trowel blade with uniform composition.

Hard-Facing Electrode—*Wall Colmonoy Corp., 19345 John R St., Detroit 3.* "Wallex No. 2" electrode gives deposit material consisting of chrome, manganese, silicon, iron alloy. Deposit has hardness ranging from 49 to 53 Rockwell C. It is available as electrodes in $\frac{1}{8}$", $\frac{3}{16}$" and $\frac{1}{4}$" diameters by 14" long. It is packed in 25-lb. corrugated paper cartons with directions for application enclosed. Typical uses are for shovel, scarifier and ditcher teeth, dragline, clamshell and conveyor buckets, tractor grousers, scraper and mixer blades, guides and drag chain links.

Saw—*DeWalt, Inc., Lancaster, Pa.* Model GE radial arm saw is offered with power cross feed. Besides straight cut-off, machine also makes miter cuts, bevel cuts and compound miter cuts with power cross feed. Materials up to 2" x 18" can be cut without any adjustments being made in air feed mechanism.

Sump Pump—*Kenco, Inc., 1125 N. Ridge Road, Lorain, Ohio.* Model P-109 submersible sump pump is manufactured in cast iron waterproof case. All functional parts are bronze. Feature of pump is "No-Float" liquid level control switch.

Tires 10 feet tall and four feet wide have been manufactured for experimental use on a "swamp buggy" now undergoing development by LeTourneau at Longview, Texas. The tires are pictured installed on a 35-ton capacity Tournapull for a test run. Note how they do not sink in. Manufactured by Firestone Tire & Rubber Co., the tires are tubeless and are designed to operate at air pressure from 10 to 15 pounds, depending upon deflection.



TOUGH GOING . . . and no doubt about it! Here's a UNIT Excavator that's really *IN* but still *ON* the job. Regardless of the swampy ground, there's always plenty of power to provide dependable crawler traction. UNIT machines are designed for just this type of performance under difficult conditions.

The famous UNIT One-Piece Gear Case assures perfect alignment of all working parts. Twin Hook Rollers . . . Automatic Traction Brakes . . . Interchangeable Disc Clutches plus quality construction make it possible for UNIT to meet the most rigid demands. The streamlined FULL VISION CAB provides maximum visibility in all directions, assuring SAFE and EFFICIENT operation.

A comparison will prove you just can't beat UNIT for SPEED, FLEXIBILITY and TROUBLE-FREE performance at low cost.

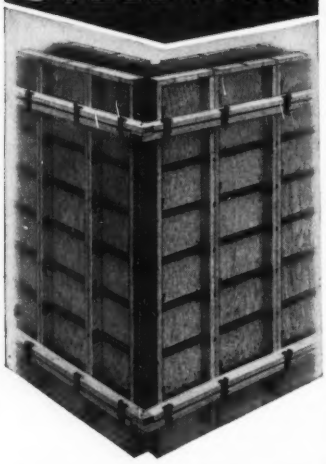
SEE FOR YOURSELF: *Let us send you our novel TV Brochure. It illustrates the complete UNIT line.*

UNIT CRANE & SHOVEL CORPORATION
6307 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

All Models Convertible to ALL Attachments!

SYMONS FORMS with STEEL RIBS



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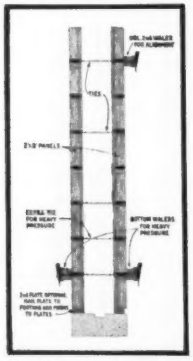
Symons heavy duty Steel Rib forms assemble and strip quickly and easily saving you time and labor costs. Because stripping is simple, and the steel rib reinforces the vital parts, Symons Forms last from 50 to 100 uses . . . this means cost per use is exceptionally low.



Try these forms on a rental basis. Rental charges apply on the purchase price.

To get a comprehensive picture of how Symons forming system works and its cost to you, send in the plans for your next job. We will study your needs and send you a form layout and job cost sheet—no obligation.

Symons

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4259 DIVERSEY AVE., CHICAGO 39, ILL.

Kindly send information regarding Symons Steel Rib Forms.

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Roller—*Buffalo-Springfield Roller Co., Springfield, Ohio.* C-Model 2-axle tandem roller line feature open grillwork over both sides of drive roll which allows operators to see roll edge directly through top of machine. Ground clearance is 17″ on 5-9-ton tandems, 20″ on 8-14-ton tandems. Final drive gears are armored by massive steel plate frame member. Both roll axles are equipped with heavy-duty tapered roller bearings. Large hinged top cover gives accessibility to engine. Rollers have 4-speed transmission. Dual controls and double seat posts permit operation from either side.

Trailer—*Rogers Bros. Corp., 223 Orchard St., Albion, Pa.* Divided-deck gooseneck trailer features better load distribution with larger percentage of it on tractor for greater stability. Divided deck is so balanced that it can be tipped or returned to traveling position by weight of one man. Double-acting hydraulic ram checks and cushions upward and downward movement of deck.

Rogers divided-deck gooseneck trailer

Hardfacing—*Mir-O-Col Alloy Co., 340 N. Ave. 21, Los Angeles 31.* "Mir-O-Col 45-90 Method" for rebuilding tractor and shovel rollers, idlers and rails combines impact resistance of Mir-O-Col #45 wire with abrasion resistance of Mir-O-Col #90 wire. No. 45 automatic wire has high nickel content and can be used in multiple-pass operations with no spalling. Hardness of deposit is from 22 to 28 Rockwell C. No. 90 automatic wire contains chromium, molybdenum and vanadium and has Rockwell C scale hardness of 46 to 48. Both wires are adaptable to submerged arc process of welding. New automatic welding heads and positioners have been developed for 45-90 method.

Dump Body Hoist—*St. Paul Hydraulic Hoist, Wayne, Mich.* "Dump it" hydraulic dump body hoist is designed for use with trucks of 128″ and longer wheelbase under platform or flatbed bodies of 8′ to 20′ length. Six models are available for 7- to 15-ton capacities. Feature of hoist is "stress eliminating" unit. Two tension links on each side of cylinder absorb almost all dumping shocks, eliminate concentrated stresses and permit use of flexible subframe. Hoist also features low mounting height, safety overload value and body hold-down latch.

Masonry Drill Bit—*New England Carbide Tool Co., 60 Brookline St., Cambridge 39, Mass.* "Thunder-Twist" carbide-tipped masonry drill bit is one-man-operated. It has 2 deep spiral vanes which remove dust. It will drill holes $\frac{3}{16}$″ to $1\frac{1}{4}$″ diameter, up to 36″ deep. Available lengths are 3″, 4″, 6″, 12″, 18″, 24″.

Engine Pre-Heater—*Kim Hotstart Manufacturing Co., West 917 Broadway, Spokane 11.* "Kim Hotstart," electric pre-heater for diesel and gas engines, plugs into any electrical outlet and, through percolator-like action, keeps engine ready for instant starting. Booklet showing typical installations is available from manufacturer.

EARTHMOVING MEN

Caterpillar Tractor Co., Peoria, Illinois, has responsible positions open for field representatives to live and serve in continental United States. Knowledge of time study and techniques important. Experience with track-type tractors, wheel-type tractors or tractor-mounted shovels essential. Civil engineer graduate preferred. Send full particulars of experience and education to Mr. R. D. Evans, Sales Development Division, **Caterpillar Tractor Co.**, Peoria 8, Illinois.

NEW LITERATURE

Dump-Trucks, Loaders—*The Euclid Road Machinery Co., Cleveland 17.* Features and general specifications of Models 70 and 71FDT-89W bottom-dumps are given in 16-page folder and single sheet covers 9 and 10BV loaders.

Lubrication—Euclid booklet gives detailed procedures for lubrication of Euclid equipment and also discusses fundamentals of lubrication. Characteristics of lubricants, their properties and tests, reasons for oil and lubricant changes, proper lubrication intervals and recommended procedures are included.

Insulating Roof-Decks—*F. E. Schundler & Co., Joliet, Ill.* Comparative costs and weight analyses of 6 roof-deck designs are presented in new booklet. Also presented are itemized cost breakdowns and comparative weight per sq. ft. for each design.

Pumps—*Ingersoll-Rand Co., 11 Broadway, New York 4.* Bulletin (Form 7223) presents general-purpose centrifugal pumps of cradle-mounted type. It covers 5 basic cradle groups and 17 corresponding pump types, their capacities, h.p. ratings and uses. Pump dimensions and table of performance under 60-cycle use are included. Special-purpose units and design modifications are covered.

Tractors and Attachments—*Caterpillar Tractor Co., Peoria 8, Ill.* DW20 tractors working with wagons, scrapers and trailers on large-scale construction, mine and quarry jobs are pictured in booklet (Form 30334) . . . Bulldozers doing pioneering, stockpiling, stripping and general earth-moving are shown in *Pay Dirt Push* (Form 30504) . . . Research and engineering operations on Caterpillar equipment are presented in *Engineered to Perform* (Form 30429). Special tests and experiments are pictured and described. Experiments are matched against operating conditions to show comparison.

Tractor-Shovel—*Drott Manufacturing Corp., 3841 W. Wisconsin Ave., Milwaukee 8.* Folder presents 3 models of "Skid-Shovel" for International tractors—1¼-yd. for TD-9, 2-yd. for TD-14A and 3-yd. for TD-18A. Featured are hydro-spring, which cushions hydraulic shocks, and "Break-Out" action which exerts dig-

NAVAL YARD SEWAGE PROJECT . . .

Michigan Model C-16, ½ yd. clamshell, equipped with 30-inch crawler pads.

Construction of 4,500 feet of sewage lines to connect the Norfolk Naval Yard system with that of Portsmouth, Virginia, is being handled by A. G. Pinkston Company, Portsmouth. Trenches are 6 feet wide, 6 feet to 16 feet deep and carry 4-inch to 30-inch main and lateral pipe.

Three MICHIGAN Crawler Excavators and a MICHIGAN Truck Crane are working on the job. Their speed and handling ease are major factors in keeping the job moving on schedule. "With the MICHIGAN air controlled clutches we gain one to two bucket loads over every ten handled by other shovels. This adds 10%-15% to our daily production," states A. G. Pinkston, Jr.

Take a tip from contractors who know! When you need an excavator-crane . . . investigate MICHIGAN.

MICHIGAN POWER SHOVEL COMPANY

485 Second Street, Benton Harbor, Michigan, U. S. A.

ging force up to 13 tons. Specific applications are suggested. Complete specifications are included.

Hauling Unit—*R. G. LeTourneau, Inc., Peoria, Ill.* Bulletin TK-137 describes and pictures "Tournarocker," rear-dump for off-road and highway hauling of dirt, rock and ore. Action shots and cut-out photos of integral parts of machine show its operation.

Industrial Tires—*B. F. Goodrich Co., 500 S. Main St., Akron, Ohio.* Complete Goodrich industrial tire line is presented in booklet. Service in which each tire should be used is given and maintenance tips on care of tires are included.

Weather Guide—*The Galion Iron Works & Mfg. Co., Galion, Ohio.* Pocket-size *Guide to the Weather* contains 16 4-color photos of different types of skies, with explanations of weather they foretell.

Wire Rope Use and Care—*A. Leschen & Sons Rope Co., 5909 Kennerly Ave., St. Louis 12.* Booklet, *Use and Care of Wire Rope,* contains 72 pages of information on proper methods of handling, reeving, breaking in, splicing, cutting, lubricating and specifying wire rope. Included are 50 illustrations and 32 diagrams and charts to demonstrate and explain suggestions and recommendations for proper wire rope use and care.

Form Erection—*Symons Clamp & Mfg. Co., 4259 W. Diversey Ave., Chicago 39.* Bulletin, *How to Erect the Symons Forming System,* explains erecting and stripping, describes system and what it consists of, discusses care of forms and factors that will affect concrete pressure.

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Of The Constructor, published monthly at Washington, D. C., for October 1, 1952.

1. The names and addresses of the publisher, editor, managing editor, and business manager, are:

Publisher: The Constructor, Inc., 1227 Munsey Building, Washington 4, D. C.

Editor, H. E. Foreman, 1227 Munsey Building, Washington 4, D. C.

Managing Editor, William E. Woodruff, 1227 Munsey Building, Washington 4, D. C.

Business Manager, M. S. Beck, 1227 Munsey Building, Washington 4, D. C.

2. The owner is: (If owned by a corporation its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member must be given.)

The Constructor, Inc., 1227 Munsey Building, Washington 4, D. C.

The Associated General Contractors of America, Inc., 1227 Munsey Bldg., Washington 4, D. C.

Arthur S. Horner, president, A. S. Horner Constr. Co., Denver, Colo.

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3. The known bondholders, mortgagees, and other security holders owning or holding one per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner. M. S. Beck, *Business Manager.*

Sworn to and subscribed before me this 3d day of October, 1952.

(SEAL) Elsie L. Leishear.

(My commission expires Dec. 31, 1953.)

MANUFACTURERS' NOTES

E. O. Boshell, G. V. Meyers and J. Carlson have been elected directors of Le Roi Co. Mr. Boshell is chairman of the board of directors and president of Westinghouse Air Brake Co., which recently acquired a controlling interest in Le Roi. Mr. Meyers is controller and Mr. Carlson is assistant to the president of Westinghouse.

Jerry G. Wilson has been named engine sales supervisor in the sales development division of Caterpillar Tractor Co. . . . Ralph J. Furstoss has been appointed assistant director of research for Caterpillar, in charge of tractor and earth-moving research projects. Russell C. Williams, assistant director of research and member of the Caterpillar organization since 1932, is leaving to join another organization.

James M. Mead, formerly manager of the New York plant of Joseph T. Ryerson & Son, Inc., has been appointed first assistant to Ainslie Y. Sawyer, vice president in charge of purchasing, procurement and merchandising.

Barber-Greene Co. have moved into their new office building, located adjacent to their main plant in Aurora, Ill. Of contemporary design, the building is 250' long and, although appearing to be 2 stories high, actually has 3 full floors with almost 55,000 sq. ft. of office space. General contractor for the building was Campbell-Lowrie-Lautermilch.

International Harvester Co. on September 24 dedicated its new $8 million motor truck engineering building and laboratories in Fort Wayne. They are adjacent to the company's Fort Wayne works. About 633 engineers, technical and professional people, office and clerical people are presently employed.

For the 8th consecutive year Marquette Cement Manufacturing Co. has won honors for excellence in annual reporting. Its 1951 annual report has been judged best in the cement industry in the Financial World Annual Report Survey. The bronze "Oscar of Industry" trophy was presented to the company at the annual awards banquet in New York October 28.

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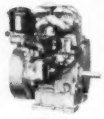

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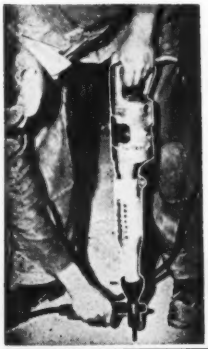

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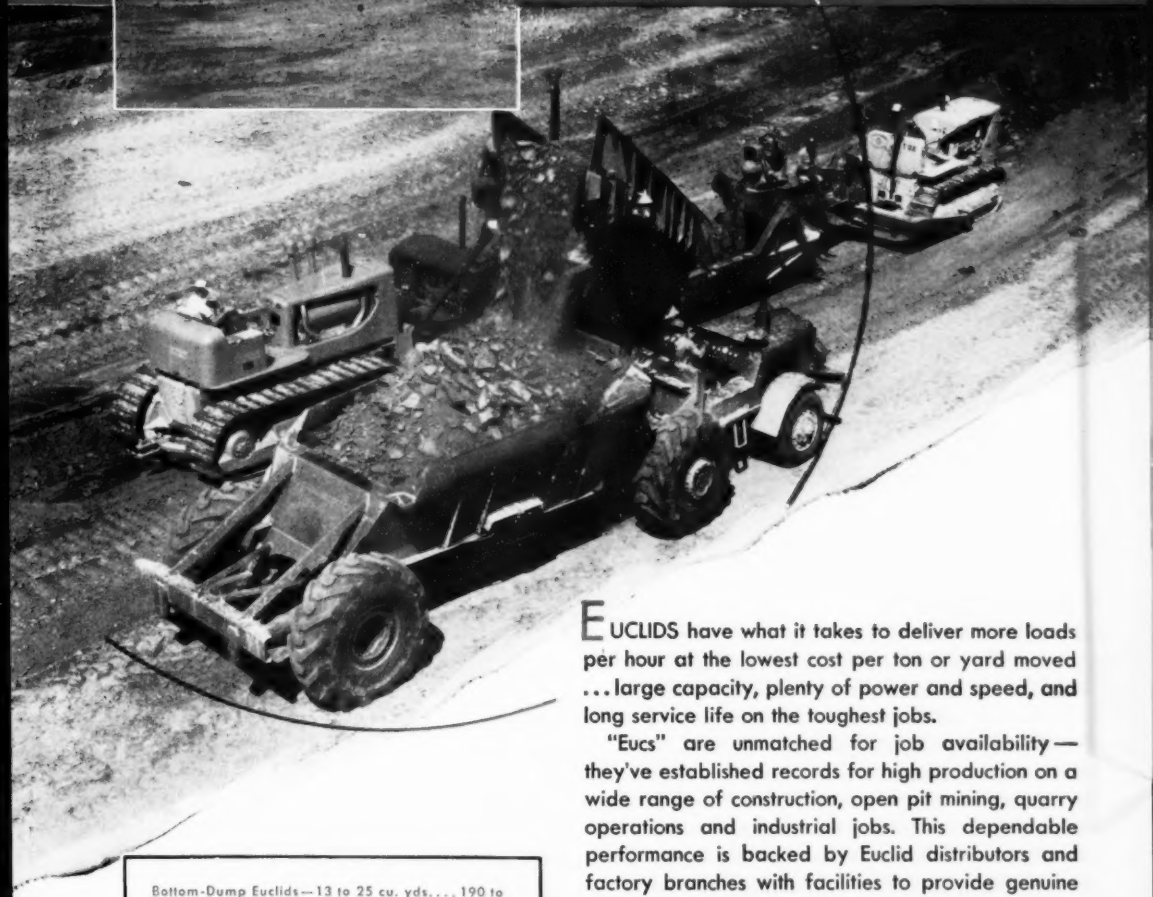

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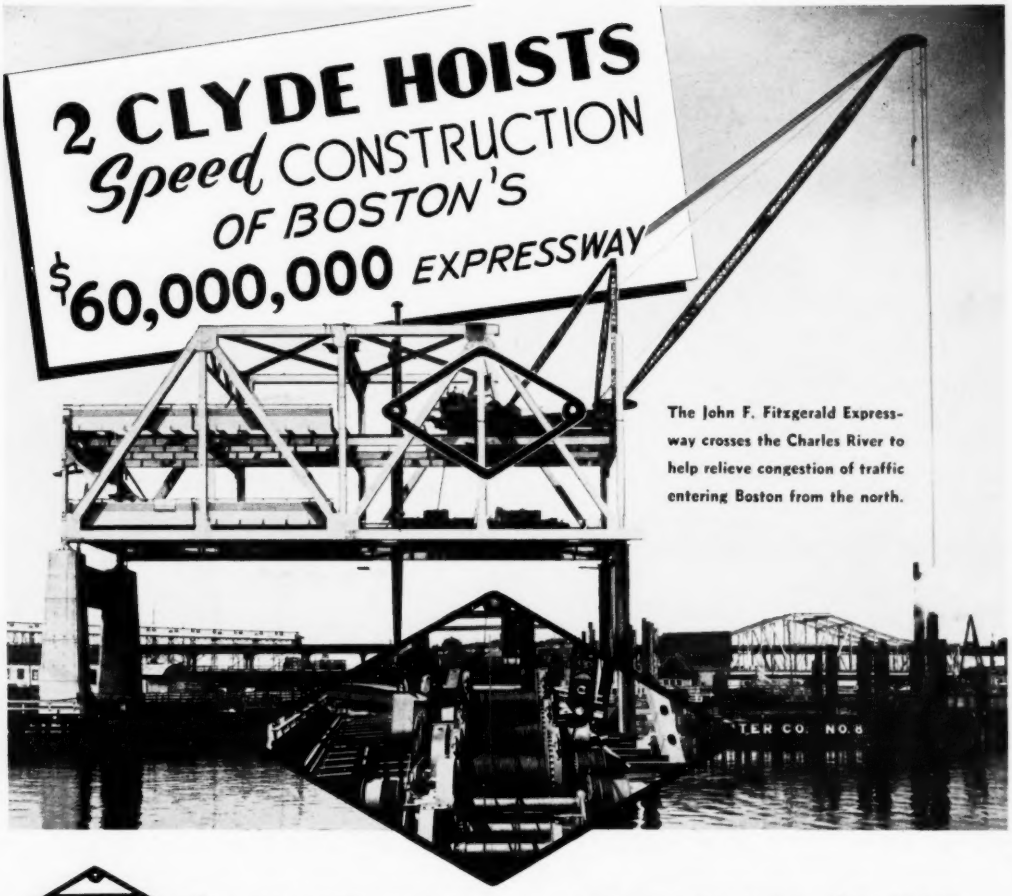

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